

## APPENDIX G: REFERENCE METHOD MONITOR DATA

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Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

Date: **September 15, 2017**

Start Time 7:28  
 Stop Time 8:30

Friday  
 Friday

### CALIBRATION ERROR

Channel	1 O2	2 CO2	3 THC	4 THC
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	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
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#### Instrument Information

Manufacturer:	Servomex	Servomex	VIG	VIG
Model:	1420C	1415C	20	20
Detection:	Paramagn.	NDIR	FID	FID

Asset or Serial No: 68A 68A 210180 210180

#### Calibration Span Value (CS)

20.950 12.400 100.000 1000.000

#### System Response Time (seconds)

#### Manufacturer Certified Cylinder Value (C<sub>v</sub>)

Zero	0.000	0.000	0.000	0.000
Low	12.100	4.990	25.100	150.000
Mid			45.700	456.000
High	20.950	12.400	85.000	861.000

#### Actual gas to be used for bias checks

20.950 4.990 85.000 861.000

#### Cylinder ID

Zero	CNG896	CNG896	CNG896	CNG896
Low	ALM007968	CC58687	CC75663	ALM060770
Mid			EB0064387	ALM022481
High	CC263665	ALM007968	ALM023930	AAL21204

#### Analyzer Calibration Response (C<sub>DR</sub>)

Zero	0.231	0.011	0.087	-0.451				
Low	12.084	5.161	25.311	146.556				
Mid			43.798	449.048				
High	20.949	12.434	85.183	861.562				

#### Analyzer Calibration Error (ACE) (Limit = 2%, Method 25A limit = 5% of gas value)

Zero	1.1%	0.1%	0.1%	0.0%
Low	-0.1%	1.4%	0.8%	-2.3%
Mid	N/A	N/A	-4.2%	-1.5%
High	0.0%	0.3%	0.2%	0.1%

#### Calibration Error Status

Zero	OK	OK	OK	OK
Low	OK	OK	OK	OK
Mid	N/A	N/A	OK	OK
High	OK	OK	OK	OK

101017 144057

07:28:13	21.106	0.135	0.695	-0.006
07:28:28	21.108	0.139	0.771	0.058
07:28:43	9.418	0.108	3.393	2.525
07:28:58	0.111	0.070	0.822	0.087
07:29:13	-0.342	0.051	0.723	0.039
07:29:28	-0.357	0.054	0.713	0.039
07:29:43	-0.375	0.062	0.675	-0.009
07:29:58	-0.108	0.075	0.665	-0.020
07:30:13	-0.022	0.078	0.607	-0.077
07:30:28	-0.023	0.001	0.609	-0.083
07:30:43	-0.024	0.005	0.595	-0.045
07:30:58	-0.024	0.012	0.590	-0.106
07:31:13	0.741	0.015	0.568	-0.169
07:31:28	17.427	8.925	0.588	-0.119
07:31:43	21.404	20.162	0.581	-0.106
07:31:58	21.589	21.330	0.597	-0.076
07:32:13	21.280	21.379	0.575	-0.070
07:32:28	21.067	20.829	0.665	0.005
07:32:43	20.879	20.832	0.606	-0.063
07:32:58	20.807	20.866	0.574	-0.066
07:33:13	20.831	20.885	0.614	-0.047
07:33:28	20.867	20.928	0.607	-0.067
07:33:43	20.887	20.915	0.593	-0.050

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Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
07:33:58	20.932	20.929	0.570	-0.090
07:34:13	20.934	20.928	0.553	-0.097
07:34:28	20.950	20.960	0.586	-0.053
07:34:43	20.953	21.001	0.575	-0.022
07:34:58	20.943	20.953	0.614	-0.027
07:35:13	20.329	20.745	0.616	-0.019
07:35:28	9.800	9.131	0.664	0.010
07:35:43	5.317	5.275	0.704	0.047
07:35:58	5.033	5.162	0.735	0.115
07:36:13	5.003	5.167	0.669	0.056
07:36:28	4.996	5.164	0.588	-0.022
07:36:43	5.837	5.153	0.675	0.072
07:36:58	11.503	9.076	0.592	-0.005
07:37:13	12.076	11.970	0.644	0.044
07:37:28	12.091	12.107	0.700	0.105
07:37:43	12.090	12.100	0.702	0.041
07:37:58	12.080	12.250	0.601	-0.023
07:38:13	12.090	12.342	0.669	0.032
07:38:28	12.086	12.344	0.688	0.084
07:38:43	12.083	12.369	0.683	0.036
07:38:58	12.092	12.380	0.683	0.032
07:39:13	12.094	12.411	0.718	0.076
07:39:28	12.088	12.429	0.776	0.104
07:39:43	12.092	12.434	0.671	-0.005
07:39:58	12.088	12.444	0.560	-0.066
07:40:13	12.086	12.440	0.665	0.006
07:40:28	12.089	12.450	0.623	-0.060
07:40:43	12.082	12.455	0.669	0.008
07:40:58	12.081	12.450	0.604	-0.027
07:41:13	12.102	12.460	0.598	-0.020
07:41:28	12.083	12.466	0.648	-0.024
07:41:43	12.098	12.475	0.633	-0.025
07:41:58	12.086	12.413	0.642	-0.049
07:42:13	12.084	12.389	0.675	-0.024
07:42:28	12.084	12.405	0.683	-0.027
07:42:43	12.083	12.423	0.661	-0.073
07:42:58	12.082	12.455	0.673	-0.065
07:43:13	11.652	12.423	0.695	-0.052
07:43:28	5.646	6.808	0.719	0.012
07:43:43	4.989	5.346	0.713	0.010
07:43:58	4.979	5.290	0.724	-0.013
07:44:13	4.968	5.266	0.751	0.067
07:44:28	4.970	5.271	0.690	0.024
07:44:43	4.968	5.262	0.655	-0.038
07:44:58	4.967	5.261	0.593	-0.099
07:45:13	4.965	5.271	0.707	-0.001
07:45:28	4.713	5.215	0.706	-0.008
07:45:43	5.614	2.770	0.569	-0.087
07:45:58	9.883	1.029	0.304	-0.282
07:46:13	3.141	0.370	0.316	-0.320
07:46:28	0.847	0.149	0.296	-0.373
07:46:43	0.221	0.081	0.274	-0.377
07:46:58	0.048	0.060	0.266	-0.397
07:47:13	-0.005	0.059	0.199	-0.396
07:47:28	-0.022	0.049	0.104	-0.421
07:47:43	-0.030	0.045	0.097	-0.199
07:47:58	-0.033	0.040	0.088	-0.197
07:48:13	-0.037	0.037	0.084	-0.159
07:48:28	-0.039	0.037	0.088	-0.187
07:48:43	-0.037	0.036	35.486	32.797
07:48:58	3.155	0.043	68.731	63.626
07:49:13	12.211	0.057	70.374	69.333
07:49:28	15.516	0.057	71.110	70.581
07:49:43	16.451	0.060	71.855	69.639
07:49:58	16.730	0.058	80.023	69.811
07:50:13	16.817	0.055	85.063	69.603

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Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
07:50:28	16.853	0.065	85.220	69.802
07:50:43	16.872	0.063	85.266	69.539
07:50:58	16.876	0.054	85.361	69.781
07:51:13	16.885	0.059	85.203	69.641
07:51:28	16.896	0.064	85.144	69.839
07:51:43	16.910	0.068	85.174	69.603
07:51:58	16.922	0.068	85.300	69.869
07:52:13	16.946	0.065	85.239	69.596
07:52:28	16.932	0.065	85.279	69.786
07:52:43	16.933	0.058	85.309	69.558
07:52:58	16.944	0.054	85.513	69.951
07:53:13	16.951	0.059	85.433	69.793
07:53:28	16.973	0.058	85.230	69.988
07:53:43	16.982	0.057	59.204	48.829
07:53:58	17.651	0.058	29.389	23.904
07:54:13	19.467	0.060	29.226	23.683
07:54:28	20.098	0.059	27.325	23.710
07:54:43	20.270	0.057	26.309	23.732
07:54:58	20.318	0.057	26.044	23.729
07:55:13	20.333	0.055	26.049	23.740
07:55:28	20.335	0.054	26.043	23.616
07:55:43	20.340	0.054	26.036	23.683
07:55:58	20.341	0.044	48.187	44.180
07:56:13	19.440	0.054	31.771	28.942
07:56:28	15.138	0.041	31.421	28.707
07:56:43	13.374	0.040	31.480	28.650
07:56:58	12.930	0.039	34.283	28.742
07:57:13	12.825	0.048	37.553	28.775
07:57:28	12.810	0.045	37.838	28.701
07:57:43	12.811	0.049	44.354	28.795
07:57:58	12.818	0.046	45.080	28.779
07:58:13	12.828	0.042	69.634	45.985
07:58:28	13.457	0.043	98.830	68.530
07:58:43	15.571	0.044	89.441	69.497
07:58:58	16.557	0.046	85.676	69.832
07:59:13	16.865	0.045	85.362	70.121
07:59:28	16.970	0.045	85.211	70.172
07:59:43	17.002	0.048	85.284	70.059
07:59:58	17.026	0.041	85.195	70.085
08:00:13	17.036	0.044	84.928	70.096
08:00:28	17.016	0.042	36.430	30.060
08:00:43	16.883	0.046	27.583	23.718
08:00:58	19.127	0.054	27.053	23.788
08:01:13	20.001	0.056	27.067	23.864
08:01:28	20.241	0.057	26.373	23.808
08:01:43	20.310	0.058	26.182	23.770
08:01:58	20.327	0.064	63.518	57.860
08:02:13	20.401	0.061	89.462	82.957
08:02:28	20.577	0.052	85.315	82.874
08:02:43	20.637	0.056	84.980	82.725
08:02:58	20.657	0.068	85.149	82.799
08:03:13	20.661	0.067	85.331	83.179
08:03:28	20.661	0.058	85.321	83.056
08:03:43	20.660	0.053	83.875	81.442
08:03:58	20.659	0.048	40.479	39.903
08:04:13	18.854	0.042	29.629	30.923
08:04:28	15.281	0.029	25.168	28.580
08:04:43	13.594	0.034	25.261	28.425
08:04:58	12.796	0.031	25.314	28.589
08:05:13	12.604	0.031	25.359	28.623
08:05:28	12.569	0.038	24.818	27.888
08:05:43	12.745	0.038	21.633	23.917
08:05:58	16.502	0.043	21.586	23.932
08:06:13	19.234	0.054	64.823	68.670
08:06:28	20.108	0.053	82.104	75.719
08:06:43	19.635	0.051	85.464	75.641

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**CALIBRATION ERROR**

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
08:06:58	18.855	0.042	85.336	76.009
08:07:13	18.639	0.038	85.115	75.851
08:07:28	18.566	0.040	85.098	75.603
08:07:43	18.544	0.036	80.434	71.374
08:07:58	18.569	0.044	29.485	26.323
08:08:13	19.386	0.056	26.463	23.952
08:08:28	20.061	0.058	26.153	23.829
08:08:43	20.250	0.058	25.959	23.824
08:08:58	20.301	0.054	25.922	23.902
08:09:13	20.312	0.059	25.931	23.910
08:09:28	20.320	0.051	25.916	23.809
08:09:43	20.321	0.056	37.472	34.641
08:09:58	19.615	0.048	40.950	36.599
08:10:13	17.652	0.043	43.568	36.540
08:10:28	16.974	0.052	43.807	36.417
08:10:43	16.775	0.060	43.781	36.415
08:10:58	16.725	0.043	43.805	36.562
08:11:13	16.702	0.043	43.855	36.501
08:11:28	16.719	0.049	40.908	34.031
08:11:43	17.282	0.372	31.463	26.486
08:11:58	19.323	4.358	15.660	13.256
08:12:13	18.033	6.889	-0.553	-0.383
08:12:28	13.551	9.891	-0.632	-0.482
08:12:43	11.961	11.175	-0.574	-0.439
08:12:58	10.797	11.266	-0.296	-0.189
08:13:13	4.536	5.882	2.482	2.204
08:13:28	5.687	4.600	45.184	36.741
08:13:43	14.620	6.272	47.891	39.150
08:13:58	19.019	3.169	47.877	39.197
08:14:13	20.258	2.167	47.942	39.213
08:14:28	20.598	1.879	47.778	39.023
08:14:43	20.693	1.763	47.879	39.078
08:14:58	20.725	1.754	47.988	39.154
08:15:13	20.735	1.726	48.452	39.491
08:15:28	20.748	1.633	48.639	39.622
08:15:43	20.743	1.485	48.696	39.582
08:15:58	20.758	1.435	48.725	39.530
08:16:13	20.751	1.399	31.453	25.608
08:16:28	20.765	2.484	-0.366	-0.252
08:16:43	20.824	12.909	-0.673	-0.601
08:16:58	20.824	18.829	-0.690	-0.581
08:17:13	20.813	20.612	-0.705	-0.572
08:17:28	20.803	21.079	-0.701	-0.570
08:17:43	20.800	21.221	-0.711	-0.604
08:17:58	20.798	21.257	-0.716	-0.594
08:18:13	20.797	21.233	-0.727	-0.589
08:18:28	20.796	21.453	-0.728	-0.595
08:18:43	20.794	21.451	-0.682	-0.517
08:18:58	18.917	20.336	-0.675	-0.534
08:19:13	14.183	15.073	-0.683	-0.552
08:19:28	12.612	13.177	-0.681	-0.550
08:19:43	12.193	12.615	-0.688	-0.550
08:19:58	12.080	12.370	-0.691	-0.572
08:20:13	12.052	12.316	-0.689	-0.559
08:20:28	12.039	12.287	-0.700	-0.576
08:20:43	12.044	12.277	-0.669	-0.501
08:20:58	11.679	12.141	-0.576	-0.444
08:21:13	8.090	9.133	-0.482	-0.446
08:21:28	5.812	6.385	-0.213	-0.456
08:21:43	5.210	5.595	-0.212	-0.493
08:21:58	5.051	5.374	-0.223	-0.505
08:22:13	5.007	5.274	-0.216	-0.492
08:22:28	4.995	5.191	-0.235	-0.441
08:22:43	4.988	5.185	-0.236	-0.460
08:22:58	4.986	5.165	-0.249	-0.453
08:23:13	4.981	5.154	-0.260	-0.480

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**CALIBRATION ERROR**

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
08:23:28	4.977	5.146	0.558	0.191
08:23:43	5.858	5.076	47.844	37.828
08:23:58	13.519	2.867	53.756	42.655
08:24:13	18.728	0.889	49.490	42.773
08:24:28	20.190	0.364	45.928	42.872
08:24:43	20.589	0.177	45.929	42.910
08:24:58	20.695	0.146	34.677	32.463
08:25:13	20.644	0.125	25.237	23.487
08:25:28	20.439	0.111	21.911	20.562
08:25:43	20.372	0.112	107.550	728.181
08:25:58	20.352	0.116	107.550	852.289
08:26:13	20.393	0.104	107.550	853.591
08:26:28	20.409	0.100	107.550	853.446
08:26:43	20.426	0.083	107.550	853.942
08:26:58	20.425	0.070	107.550	860.329
08:27:13	20.422	0.069	107.550	861.743
08:27:28	20.426	0.090	107.550	861.444
08:27:43	20.411	0.087	107.550	861.499
08:27:58	20.421	0.080	107.550	861.847
08:28:13	20.417901	0.079455	107.549709	553.45536
08:28:28	20.412058	0.083076	107.549709	150.471777
08:28:43	20.549655	0.082034	107.549709	146.975521
08:28:58	20.573987	0.074984	107.549709	146.628522
08:29:13	20.571875	0.08154	107.549709	146.542046
08:29:28	20.574426	0.075807	107.549709	146.496072
08:29:43	20.56573	0.070184	103.82347	135.86172
08:29:58	20.640097	0.080306	9.190463	9.042034
08:30:13	20.782357	0.112784	27.719233	43.865575
08:30:28	20.774045	0.113963	107.549709	427.048877
08:30:43	20.755584	0.101126	107.549709	448.959162
08:30:58	20.77026	0.091909	107.549709	448.9515
08:31:13	20.763429	0.081759	107.549709	448.902241
08:31:28	20.765185	0.080114	107.549709	449.098181
08:31:43	20.760494	0.078358	107.549709	449.144156
08:31:58	20.767407	0.080141	92.277391	285.95921
08:32:13	10.479706	0.090482	3.870218	4.074594
08:32:28	0.762347	0.059485	0.731033	0.313439
08:32:43	0.059239	0.05677	0.503897	0.141582
08:32:58	-0.000643	0.047004	0.390712	0.040876
08:33:13	-0.007144	0.039461	0.332039	-0.025897
08:33:28	-0.023219	0.042204	0.286065	-0.101426
08:33:43	0.083981	0.045331	0.902561	0.408672
08:33:58	13.249831	0.074792	1.846681	1.230741
08:34:13	20.252818	0.104554	1.710619	1.149738
08:34:28	20.709554	0.108559	1.363511	0.780847

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September 15, 2017  
 Start Time 7:47  
 Stop Time 8:32

#### CALIBRATION BIAS 00

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv

#### System Response to Calibration Gasses (Cs)

C <sub>of</sub>	Zero gas	-0.037	0.038	0.087	-0.451			
C <sub>uf</sub>	Upscale gas	20.797	5.155	85.183	861.562			

#### Analyzer Calibration Error Responses (C<sub>dir</sub>)

C <sub>oce</sub>	Zero gas	0.231	0.011	0.087	-0.451
C <sub>mce</sub>	Upscale gas	20.949	5.161	85.183	861.562

#### Actual Upscale Gas Value (C<sub>ma</sub>)

C <sub>ma</sub>	Upscale gas	20.950	4.990	85.000	861.000
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#### Calibration Span Value (CS)

	20.950	12.400	100.000	1000.000
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#### System Bias as Percent of Calibration Span Value (SB) (5%)

Zero gas	-1.3%	0.2%	0.0%	0.0%
Upscale gas	-0.7%	0.0%	0.0%	0.0%

#### System Bias Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

#### Previous System Response to Calibration Gases (Cs)

C <sub>oi</sub>	Zero gas	N/A	N/A	N/A	N/A
C <sub>ui</sub>	Upscale gas	N/A	N/A	N/A	N/A

#### Drift Assessment as Percent of Calibration Span Value (D) (3%)

Zero gas	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A

#### Drift Assessment Status

Zero gas	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A

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07:47:13	-0.005	0.059	0.199	-0.396
07:47:28	-0.022	0.049	0.104	-0.421
07:47:43	-0.030	0.045	0.097	-0.199
07:47:58	-0.033	0.040	0.088	-0.197
07:48:13	-0.037	0.037	0.084	-0.159
07:48:28	-0.039	0.037	0.088	-0.187
07:48:43	-0.037	0.036	35.486	32.797
07:48:58	3.155	0.043	68.731	63.626
07:49:13	12.211	0.057	70.374	69.333
07:49:28	15.516	0.057	71.110	70.581
07:49:43	16.451	0.060	71.855	69.639
07:49:58	16.730	0.058	80.023	69.811
07:50:13	16.817	0.055	85.063	69.603
07:50:28	16.853	0.065	85.220	69.802
07:50:43	16.872	0.063	85.266	69.539
07:50:58	16.876	0.054	85.361	69.781
07:51:13	16.885	0.059	85.203	69.641
07:51:28	16.896	0.064	85.144	69.839
07:51:43	16.910	0.068	85.174	69.603
07:51:58	16.922	0.068	85.300	69.869
07:52:13	16.946	0.065	85.239	69.596
07:52:28	16.932	0.065	85.279	69.786
07:52:43	16.933	0.058	85.309	69.558

**Sims Metal Management**  
**CleanAir Project No. 13318**  
**Johnston, RI**  
**TE Outlet**

September 15, 2017  
Start Time 7:47  
Stop Time 8:32

**CALIBRATION BIAS 00**

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
07:52:58	16.944	0.054	85.513	69.951
07:53:13	16.951	0.059	85.433	69.793
07:53:28	16.973	0.058	85.230	69.988
07:53:43	16.982	0.057	59.204	48.829
07:53:58	17.651	0.058	29.389	23.904
07:54:13	19.467	0.060	29.226	23.683
07:54:28	20.098	0.059	27.325	23.710
07:54:43	20.270	0.057	26.309	23.732
07:54:58	20.318	0.057	26.044	23.729
07:55:13	20.333	0.055	26.049	23.740
07:55:28	20.335	0.054	26.043	23.616
07:55:43	20.340	0.054	26.036	23.683
07:55:58	20.341	0.044	48.187	44.180
07:56:13	19.440	0.054	31.771	28.942
07:56:28	15.138	0.041	31.421	28.707
07:56:43	13.374	0.040	31.480	28.650
07:56:58	12.930	0.039	34.283	28.742
07:57:13	12.825	0.048	37.553	28.775
07:57:28	12.810	0.045	37.838	28.701
07:57:43	12.811	0.049	44.354	28.795
07:57:58	12.818	0.046	45.080	28.779
07:58:13	12.828	0.042	69.634	45.985
07:58:28	13.457	0.043	98.830	68.530
07:58:43	15.571	0.044	89.441	69.497
07:58:58	16.557	0.046	85.676	69.832
07:59:13	16.865	0.045	85.362	70.121
07:59:28	16.970	0.045	85.211	70.172
07:59:43	17.002	0.048	85.284	70.059
07:59:58	17.026	0.041	85.195	70.085
08:00:13	17.036	0.044	84.928	70.096
08:00:28	17.016	0.042	36.430	30.060
08:00:43	16.883	0.046	27.583	23.718
08:00:58	19.127	0.054	27.053	23.788
08:01:13	20.001	0.056	27.067	23.864
08:01:28	20.241	0.057	26.373	23.808
08:01:43	20.310	0.058	26.182	23.770
08:01:58	20.327	0.064	63.518	57.860
08:02:13	20.401	0.061	89.462	82.957
08:02:28	20.577	0.052	85.315	82.874
08:02:43	20.637	0.056	84.980	82.725
08:02:58	20.657	0.068	85.149	82.799
08:03:13	20.661	0.067	85.331	83.179
08:03:28	20.661	0.058	85.321	83.056
08:03:43	20.660	0.053	83.875	81.442
08:03:58	20.659	0.048	40.479	39.903
08:04:13	18.854	0.042	29.629	30.923
08:04:28	15.281	0.029	25.168	28.580
08:04:43	13.594	0.034	25.261	28.425
08:04:58	12.796	0.031	25.314	28.589
08:05:13	12.604	0.031	25.359	28.623

**Sims Metal Management**  
**CleanAir Project No. 13318**  
**Johnston, RI**  
**TE Outlet**

September 15, 2017  
Start Time 7:47  
Stop Time 8:32

**CALIBRATION BIAS 00**

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
08:05:28	12.569	0.038	24.818	27.888
08:05:43	12.745	0.038	21.633	23.917
08:05:58	16.502	0.043	21.586	23.932
08:06:13	19.234	0.054	64.823	68.670
08:06:28	20.108	0.053	82.104	75.719
08:06:43	19.635	0.051	85.464	75.641
08:06:58	18.855	0.042	85.336	76.009
08:07:13	18.639	0.038	85.115	75.851
08:07:28	18.566	0.040	85.098	75.603
08:07:43	18.544	0.036	80.434	71.374
08:07:58	18.569	0.044	29.485	26.323
08:08:13	19.386	0.056	26.463	23.952
08:08:28	20.061	0.058	26.153	23.829
08:08:43	20.250	0.058	25.959	23.824
08:08:58	20.301	0.054	25.922	23.902
08:09:13	20.312	0.059	25.931	23.910
08:09:28	20.320	0.051	25.916	23.809
08:09:43	20.321	0.056	37.472	34.641
08:09:58	19.615	0.048	40.950	36.599
08:10:13	17.652	0.043	43.568	36.540
08:10:28	16.974	0.052	43.807	36.417
08:10:43	16.775	0.060	43.781	36.415
08:10:58	16.725	0.043	43.805	36.562
08:11:13	16.702	0.043	43.855	36.501
08:11:28	16.719	0.049	40.908	34.031
08:11:43	17.282	0.372	31.463	26.486
08:11:58	19.323	4.358	15.660	13.256
08:12:13	18.033	6.889	-0.553	-0.383
08:12:28	13.551	9.891	-0.632	-0.482
08:12:43	11.961	11.175	-0.574	-0.439
08:12:58	10.797	11.266	-0.296	-0.189
08:13:13	4.536	5.882	2.482	2.204
08:13:28	5.687	4.600	45.184	36.741
08:13:43	14.620	6.272	47.891	39.150
08:13:58	19.019	3.169	47.877	39.197
08:14:13	20.258	2.167	47.942	39.213
08:14:28	20.598	1.879	47.778	39.023
08:14:43	20.693	1.763	47.879	39.078
08:14:58	20.725	1.754	47.988	39.154
08:15:13	20.735	1.726	48.452	39.491
08:15:28	20.748	1.633	48.639	39.622
08:15:43	20.743	1.485	48.696	39.582
08:15:58	20.758	1.435	48.725	39.530
08:16:13	20.751	1.399	31.453	25.608
08:16:28	20.765	2.484	-0.366	-0.252
08:16:43	20.824	12.909	-0.673	-0.601
08:16:58	20.824	18.829	-0.690	-0.581
08:17:13	20.813	20.612	-0.705	-0.572
08:17:28	20.803	21.079	-0.701	-0.570
08:17:43	20.800	21.221	-0.711	-0.604

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 15, 2017  
 Start Time 7:47  
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#### CALIBRATION BIAS 00

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
08:17:58	20.798	21.257	-0.716	-0.594
08:18:13	20.797	21.233	-0.727	-0.589
08:18:28	20.796	21.453	-0.728	-0.595
08:18:43	20.794	21.451	-0.682	-0.517
08:18:58	18.917	20.336	-0.675	-0.534
08:19:13	14.183	15.073	-0.683	-0.552
08:19:28	12.612	13.177	-0.681	-0.550
08:19:43	12.193	12.615	-0.688	-0.550
08:19:58	12.080	12.370	-0.691	-0.572
08:20:13	12.052	12.316	-0.689	-0.559
08:20:28	12.039	12.287	-0.700	-0.576
08:20:43	12.044	12.277	-0.669	-0.501
08:20:58	11.679	12.141	-0.576	-0.444
08:21:13	8.090	9.133	-0.482	-0.446
08:21:28	5.812	6.385	-0.213	-0.456
08:21:43	5.210	5.595	-0.212	-0.493
08:21:58	5.051	5.374	-0.223	-0.505
08:22:13	5.007	5.274	-0.216	-0.492
08:22:28	4.995	5.191	-0.235	-0.441
08:22:43	4.988	5.185	-0.236	-0.460
08:22:58	4.986	5.165	-0.249	-0.453
08:23:13	4.981	5.154	-0.260	-0.480
08:23:28	4.977	5.146	0.558	0.191
08:23:43	5.858	5.076	47.844	37.828
08:23:58	13.519	2.867	53.756	42.655
08:24:13	18.728	0.889	49.490	42.773
08:24:28	20.190	0.364	45.928	42.872
08:24:43	20.589	0.177	45.929	42.910
08:24:58	20.695	0.146	34.677	32.463
08:25:13	20.644	0.125	25.237	23.487
08:25:28	20.439	0.111	21.911	20.562
08:25:43	20.372	0.112	107.550	728.181
08:25:58	20.352	0.116	107.550	852.289
08:26:13	20.393	0.104	107.550	853.591
08:26:28	20.409	0.100	107.550	853.446
08:26:43	20.426	0.083	107.550	853.942
08:26:58	20.425	0.070	107.550	860.329
08:27:13	20.422	0.069	107.550	861.743
08:27:28	20.426	0.090	107.550	861.444
08:27:43	20.411	0.087	107.550	861.499
08:27:58	20.421	0.080	107.550	861.847
08:28:13	20.417901	0.079455	107.549709	553.45536
08:28:28	20.412058	0.083076	107.549709	150.471777
08:28:43	20.549655	0.082034	107.549709	146.975521
08:28:58	20.573987	0.074984	107.549709	146.628522
08:29:13	20.571875	0.08154	107.549709	146.542046
08:29:28	20.574426	0.075807	107.549709	146.496072
08:29:43	20.56573	0.070184	103.82347	135.86172
08:29:58	20.640097	0.080306	9.190463	9.042034
08:30:13	20.782357	0.112784	27.719233	43.865575

**Sims Metal Management**  
**CleanAir Project No. 13318**  
**Johnston, RI**  
**TE Outlet**

September 15, 2017  
Start Time 7:47  
Stop Time 8:32

**CALIBRATION BIAS 00**

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
08:30:28	20.774045	0.113963	107.549709	427.048877
08:30:43	20.755584	0.101126	107.549709	448.959162
08:30:58	20.77026	0.091909	107.549709	448.9515
08:31:13	20.763429	0.081759	107.549709	448.902241
08:31:28	20.765185	0.080114	107.549709	449.098181
08:31:43	20.760494	0.078358	107.549709	449.144156
08:31:58	20.767407	0.080141	92.277391	285.95921
08:32:13	10.479706	0.090482	3.870218	4.074594
08:32:28	0.762347	0.059485	0.731033	0.313439
08:32:43	0.059239	0.05677	0.503897	0.141582
08:32:58	-0.000643	0.047004	0.390712	0.040876
08:33:13	-0.007144	0.039461	0.332039	-0.025897
08:33:28	-0.023219	0.042204	0.286065	-0.101426
08:33:43	0.083981	0.045331	0.902561	0.408672
08:33:58	13.249831	0.074792	1.846681	1.230741
08:34:13	20.252818	0.104554	1.710619	1.149738
08:34:28	20.709554	0.108559	1.363511	0.780847

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 15, 2017  
 Start Time 9:14  
 Stop time 10:33

REFERENCE METHOD RUN 1

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
<b>Calibration Checks</b>				
C <sub>oi</sub> Initial zero	-0.037	0.038	0.087	-0.451
C <sub>ui</sub> Initial upscale	20.797	5.155	85.183	861.562
C <sub>of</sub> Final zero	-0.018	0.029	0.442	1.214
C <sub>uf</sub> Final upscale	20.840	5.135	83.183	854.099
C <sub>ma</sub> Actual gas value	20.950	4.990	85.000	861.000
<b>Analyzer Averages (concentrations)</b>				
C <sub>Avg</sub> Average conc.	20.832	0.107	105.204	455.716
C <sub>Gas</sub> Bias adjusted	20.963	0.072	106.292	457.221

Clock Time (at end of sample period)

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08:59	20.800	0.090	1.435	0.830
09:00	20.812	0.093	1.345	0.771
09:01	20.825	0.097	1.273	0.721
09:02	20.834	0.094	69.348	82.465
09:03	20.824	0.103	107.550	226.695
09:04	20.818	0.117	106.986	205.234
09:05	20.822	0.121	89.920	109.051
09:06	20.837	0.117	105.161	194.783
09:07	20.830	0.123	107.008	420.132
09:08	20.840	0.107	95.503	206.025
09:09	20.846	0.091	104.287	282.109
09:10	20.842	0.108	107.550	332.493
09:11	20.843	0.116	106.805	271.896
09:12	20.837	0.104	107.550	421.407
09:13	20.840	0.104	101.297	335.113
09:14	20.830	0.107	107.550	583.507
09:15	20.836	0.120	107.550	331.805
09:16	20.834	0.114	103.880	179.058
09:17	20.823	0.115	107.422	229.772
09:18	20.813	0.110	107.180	480.466
09:19	20.807	0.126	104.015	316.801
09:20	20.816	0.125	100.649	176.653
09:21	20.817	0.132	107.550	832.162
09:22	20.796	0.126	107.550	551.104
09:23	20.808	0.108	107.214	334.540
09:24	20.797	0.103	107.550	383.127
09:25	20.794	0.117	104.499	337.641
09:26	20.789	0.122	107.550	483.510
09:27	20.799	0.121	107.550	393.495
09:28	20.786	0.114	107.550	455.786
09:29	20.801	0.089	107.550	359.757
09:30	20.793	0.095	107.550	461.660
09:31	20.785	0.114	107.550	549.956
09:32	20.786	0.111	107.550	451.580
09:33	20.817	0.112	107.550	505.550
09:34	20.809	0.125	107.107	495.670
09:35	20.812	0.105	107.550	503.275
09:36	20.812	0.103	107.550	570.762
09:37	20.832	0.115	107.550	698.929
09:38	20.833	0.113	107.550	306.843
09:39	20.844	0.114	106.119	233.805
09:40	20.836	0.113	107.550	489.986
09:41	20.843	0.121	106.517	254.706
09:42	20.851	0.120	102.432	295.851
09:43	20.835	0.120	107.550	812.866

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 15, 2017  
 Start Time 9:14  
 Stop time 10:33

REFERENCE METHOD RUN 1

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
09:44	20.849	0.125	107.545	316.027
09:45	20.861	0.119	93.241	110.464
09:46	20.866	0.118	34.587	34.150
09:47	20.870	0.119	16.063	15.864
09:48	20.874	0.115	12.289	12.199
09:49	20.865	0.116	9.947	9.780
09:50	20.866	0.122	8.493	8.314
09:51	20.862	0.122	7.810	7.637
09:52	20.852	0.126	7.259	7.120
09:53	20.845	0.131	7.125	6.999
09:54	20.840	0.130	6.793	6.679
09:55	20.837	0.121	6.164	6.017
09:56	20.835	0.113	6.344	6.231
09:57	20.831	0.106	6.183	6.026
09:58	20.828	0.091	6.280	6.177
09:59	20.832	0.086	6.487	6.354
10:00	20.824	0.090	6.274	6.095
10:01	20.822	0.086	6.268	6.045
10:02	20.821	0.089	12.764	12.479
10:03	20.832	0.100	63.420	70.446
10:04	20.830	0.101	94.075	203.797
10:05	20.812	0.096	107.550	535.511
10:06	20.814	0.088	107.550	560.381
10:07	20.826	0.083	107.550	480.518
10:08	20.826	0.081	107.550	523.771
10:09	20.815	0.084	107.550	858.511
10:10	20.837	0.093	107.550	451.829
10:11	20.843	0.089	107.550	408.089
10:12	20.846	0.094	107.550	560.103
10:13	20.846	0.104	107.550	524.238
10:14	20.840	0.110	107.550	622.375
10:15	20.853	0.103	107.550	452.265
10:16	20.834	0.106	107.550	614.914
10:17	20.852	0.117	107.550	320.522
10:18	20.863	0.096	83.392	83.887
10:19	20.864	0.095	81.103	127.627
10:20	20.865	0.084	107.493	161.052
10:21	20.865	0.086	102.923	260.257
10:22	20.855	0.102	107.550	482.313
10:23	20.857	0.100	107.550	599.136
10:24	20.863	0.108	107.550	442.016
10:25	20.851	0.114	107.550	684.501
10:26	20.848	0.107	107.550	958.141
10:27	20.852	0.113	107.550	877.074
10:28	20.864	0.117	104.324	430.161
10:29	20.874	0.114	106.596	447.729
10:30	20.857	0.107	107.550	867.982
10:31	20.867	0.115	107.550	694.828
10:32	20.861	0.102	107.536	380.896
10:33	20.877	0.093	107.578	320.678

End Run

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 15, 2017  
 Start Time 10:38  
 Stop Time 10:55

#### CALIBRATION BIAS 01

Channel	1 O2	2 CO2	3 THC	4 THC
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Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
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#### System Response to Calibration Gasses ( $C_s$ )

$C_{oi}$	Zero gas	-0.018	0.029	0.442	1.214			
$C_{ui}$	Upscale gas	20.840	5.135	83.183	854.099			

#### Analyzer Calibration Error Responses ( $C_{dir}$ )

$C_{oce}$	Zero gas	0.231	0.011	0.087	-0.451
$C_{mce}$	Upscale gas	20.949	5.161	85.183	861.562

#### Actual Upscale Gas Value ( $C_{MA}$ )

$C_{ma}$	Upscale gas	20.950	4.990	85.000	861.000
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#### Calibration Span Value (CS)

20.950	12.400	100.000	1000.000
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#### System Bias as Percent of Calibration Span Value (SB) (%)

Zero gas	-1.2%	0.1%	0.4%	0.2%
Upscale gas	-0.5%	-0.2%	-2.0%	-0.7%

#### System Bias Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

#### Previous System Response to Calibration Gases ( $C_s$ )

$C_{oi}$	Zero gas	-0.037	0.038	0.087	-0.451
$C_{ui}$	Upscale gas	20.797	5.155	85.183	861.562

#### Drift Assessment as Percent of Calibration Span Value (D) (%)

Zero gas	0.1%	-0.1%	0.4%	0.2%
Upscale gas	0.2%	-0.2%	-2.0%	-0.7%

#### Drift Assessment Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

101017 144057

10:38:06	19.799	0.112	11.411	11.340
10:38:21	4.652	0.091	5.634	5.254
10:38:36	0.272	0.021	4.907	4.623
10:38:51	0.030	0.011	4.203	3.849
10:39:06	0.003	0.014	3.959	3.620
10:39:21	-0.007	0.013	3.363	3.466
10:39:36	-0.011	0.027	3.043	3.336
10:39:51	-0.014	0.029	2.498	3.204
10:40:06	-0.022	0.038	2.385	3.087
10:40:21	-0.019	0.025	2.288	3.001
10:40:36	-0.018	0.026	2.191	2.921
10:40:51	-0.018	0.027	2.104	2.867
10:41:06	-0.019	0.033	2.045	2.770
10:41:21	0.830	0.052	1.592	2.368
10:41:36	15.518	11.117	0.743	1.469
10:41:51	20.564	20.134	0.692	1.398
10:42:06	20.811	20.747	0.648	1.323
10:42:21	20.823	20.848	0.601	1.291
10:42:36	20.828	20.920	0.568	1.249
10:42:51	20.831	20.940	0.522	1.206
10:43:06	20.835	20.970	0.495	1.173
10:43:21	20.835	20.968	0.452	1.151
10:43:36	20.838	20.998	0.412	1.125
10:43:51	20.842	21.011	0.380	1.122
10:44:06	20.839	21.040	0.340	1.083
10:44:21	20.839	21.072	0.309	1.050
10:44:36	20.832	21.048	0.742	1.503
10:44:51	13.643	15.035	0.836	1.594
10:45:06	5.548	6.198	0.760	1.543
10:45:21	5.049	5.316	0.714	1.464
10:45:36	5.013	5.237	0.680	1.417
10:45:51	5.006	5.220	0.637	1.365
10:46:06	5.003	5.215	0.599	1.322
10:46:21	4.999	5.206	0.568	1.294

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 15, 2017  
 Start Time 10:38  
 Stop Time 10:55

CALIBRATION BIAS 01

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
10:46:36	4.988	5.186	0.539	1.271
10:46:51	4.992	5.150	0.509	1.261
10:47:06	4.986	5.132	0.475	1.234
10:47:21	4.989	5.127	0.442	1.219
10:47:36	4.991	5.147	0.411	1.188
10:47:51	7.137	4.836	50.191	50.276
10:48:06	17.935	1.497	71.568	79.174
10:48:21	20.561	0.206	79.703	79.198
10:48:36	20.705	0.104	82.133	78.964
10:48:51	20.720	0.100	83.196	78.965
10:49:06	20.733	0.098	83.202	79.219
10:49:21	20.734	0.090	83.150	79.279
10:49:36	20.742	0.084	81.999	77.922
10:49:51	20.720	0.080	99.566	551.352
10:50:06	20.522	0.104	107.550	803.892
10:50:21	20.501	0.090	107.550	814.793
10:50:36	20.503	0.090	107.550	851.152
10:50:51	20.503	0.085	107.550	852.710
10:51:06	20.506	0.092	107.550	853.908
10:51:21	20.505	0.080	107.550	855.282
10:51:36	20.504	0.079	107.550	854.344
10:51:51	20.502	0.083	107.550	852.670
10:52:06	20.509	0.083	107.550	852.402
10:52:21	20.511	0.088	107.550	851.737
10:52:36	20.539	0.077	106.176	325.353
10:52:51	20.707	0.078	85.901	85.778
10:53:06	20.758	0.064	84.185	84.080
10:53:21	20.758	0.078	83.981	84.019
10:53:36	20.760	0.081	83.831	83.948
10:53:51	20.762	0.077	73.937	73.726
10:54:06	16.612	0.070	7.652	8.295
10:54:21	1.910	0.050	0.625	1.484
10:54:36	0.123	0.035	0.500	1.392
10:54:51	0.040	0.032	0.417	1.337
10:55:06	1.231	0.267	0.013	0.945
10:55:21	11.041	9.278	-0.319	0.631
10:55:36	12.756	12.602	-0.342	0.593
10:55:51	13.623	12.887	-0.483	0.468

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 15, 2017  
 Start Time 12:21  
 Stop time 13:36

REFERENCE METHOD RUN 2

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
<b>Calibration Checks</b>				
C <sub>oi</sub> Initial zero	-0.018	0.029	0.442	1.214
C <sub>ui</sub> Initial upscale	20.840	5.135	83.183	854.099
C <sub>of</sub> Final zero	0.011	0.032	0.815	1.673
C <sub>uf</sub> Final upscale	20.838	5.138	85.502	855.103
C <sub>ma</sub> Actual gas value	20.950	4.990	85.000	861.000
<b>Analyzer Averages (concentrations)</b>				
C <sub>Avg</sub> Average conc.	21.372	0.107	102.173	337.269
C <sub>Gas</sub> Bias adjusted	21.486	0.075	103.105	338.913

Clock Time (at end of sample period)

101017 144057	11:59	20.935	0.093	1.247	2.002
	12:00	20.933	0.095	0.940	1.716
	12:01	20.928	0.103	0.745	1.516
	12:02	20.929	0.106	0.696	1.455
	12:03	20.926	0.105	0.653	1.448
	12:04	20.930	0.099	0.828	1.623
	12:05	20.932	0.105	0.897	1.727
	12:06	20.938	0.107	1.047	1.876
	12:07	20.938	0.096	1.174	1.992
	12:08	20.943	0.099	0.890	1.731
	12:09	20.942	0.089	0.764	1.603
	12:10	20.932	0.085	0.754	1.597
	12:11	20.939	0.082	0.812	1.638
	12:12	20.950	0.085	1.124	1.943
	12:13	20.954	0.089	1.341	2.152
	12:14	20.981	0.086	1.212	2.024
	12:15	21.381	0.100	1.092	1.908
	12:16	21.300	0.101	1.043	1.839
	12:17	21.304	0.099	1.340	2.149
	12:18	21.173	0.105	3.621	4.423
	12:19	21.302	0.102	33.015	38.095
	12:20	21.109	0.105	96.651	176.124
	12:21	21.162	0.099	107.550	331.374 Start Run 2
	12:22	21.174	0.111	107.390	311.568
	12:23	21.126	0.105	107.550	343.193
	12:24	21.338	0.093	106.940	229.825
	12:25	21.065	0.107	107.550	298.255
	12:26	21.081	0.107	88.076	116.578
	12:27	21.024	0.107	102.616	318.162
	12:28	21.049	0.098	85.403	99.190
	12:29	21.048	0.093	93.021	102.784
	12:30	21.068	0.099	107.438	400.794
	12:31	21.056	0.101	101.467	205.991
	12:32	21.013	0.102	107.550	555.536
	12:33	21.020	0.100	107.000	341.403
	12:34	21.155	0.105	107.550	395.669
	12:35	21.214	0.100	104.666	351.508
	12:36	21.221	0.096	107.550	368.872
	12:37	21.308	0.101	97.161	262.361
	12:38	21.280	0.111	104.301	284.597
	12:39	21.284	0.108	101.031	153.358
	12:40	21.236	0.116	103.729	309.404
	12:41	21.221	0.118	104.346	302.843
	12:42	21.271	0.114	107.550	289.983
	12:43	21.069	0.106	85.140	122.216

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 15, 2017  
 Start Time 12:21  
 Stop time 13:36

REFERENCE METHOD RUN 2

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
12:44	21.158	0.108	76.815	100.159
12:45	21.364	0.108	107.550	363.855
12:46	21.404	0.107	88.146	121.254
12:47	21.413	0.115	71.416	82.714
12:48	21.327	0.125	107.550	307.436
12:49	21.247	0.119	107.472	174.079
12:50	21.070	0.116	101.734	317.575
12:51	21.039	0.115	107.550	343.875
12:52	21.163	0.108	53.776	76.570
12:53	21.099	0.100	14.148	15.153
12:54	21.012	0.092	13.237	14.401
12:55	21.110	0.095	10.249	11.306
12:56	21.351	0.092	8.909	9.985
12:57	21.391	0.094	7.919	9.006
12:58	21.414	0.094	7.020	8.124
12:59	21.467	0.098	6.745	7.858
13:00	21.394	0.101	6.334	7.414
13:01	21.594	0.102	5.747	6.790
13:02	21.352	0.101	5.530	6.582
13:03	21.551	0.100	5.468	6.518
13:04	21.686	0.099	54.306	58.328
13:05	21.816	0.099	93.542	229.542
13:06	21.704	0.091	107.550	277.354
13:07	21.744	0.098	106.839	213.405
13:08	21.633	0.119	100.802	213.788
13:09	21.702	0.107	82.145	102.553
13:10	21.729	0.105	98.185	181.927
13:11	21.579	0.100	85.429	133.981
13:12	21.621	0.108	107.550	263.322
13:13	21.730	0.105	107.550	469.562
13:14	21.677	0.115	107.550	658.476
13:15	21.649	0.115	107.550	436.510
13:16	21.655	0.102	107.550	367.606
13:17	21.606	0.100	99.104	349.487
13:18	21.568	0.105	106.105	740.005
13:19	21.442	0.107	107.550	547.489
13:20	21.490	0.097	91.558	102.732
13:21	21.629	0.102	105.903	478.890
13:22	21.577	0.100	102.910	167.680
13:23	21.576	0.090	107.550	284.942
13:24	21.597	0.102	107.550	418.449
13:25	21.360	0.107	107.503	487.937
13:26	21.382	0.120	88.870	190.866
13:27	21.413	0.124	103.538	186.543
13:28	21.601	0.119	106.702	221.247
13:29	21.481	0.110	107.550	447.712
13:30	21.346	0.120	107.550	487.887
13:31	21.401	0.108	107.550	784.927
13:32	21.627	0.100	107.550	886.023
13:33	21.480	0.103	107.550	314.742
13:34	21.487	0.118	107.550	783.441
13:35	21.637	0.111	107.550	725.141
13:36	21.452	0.110	107.550	679.665
13:37	21.435	0.110	66.457	104.248

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 15, 2017  
 Start Time 13:38  
 Stop Time 14:05

#### CALIBRATION BIAS 02

Channel	1 O2	2 CO2	3 THC	4 THC
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	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
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#### System Response to Calibration Gasses ( $C_s$ )

$C_{oi}$	Zero gas	0.011	0.032	0.815	1.673		
$C_{ui}$	Upscale gas	20.838	5.138	85.502	855.103		

#### Analyzer Calibration Error Responses ( $C_{dir}$ )

$C_{oce}$	Zero gas	0.231	0.011	0.087	-0.451
$C_{mce}$	Upscale gas	20.949	5.161	85.183	861.562

#### Actual Upscale Gas Value ( $C_{MA}$ )

$C_{ma}$	Upscale gas	20.950	4.990	85.000	861.000
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#### Calibration Span Value (CS)

20.950	12.400	100.000	1000.000
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#### System Bias as Percent of Calibration Span Value (SB) (%)

Zero gas	-1.1%	0.2%	0.7%	0.2%
Upscale gas	-0.5%	-0.2%	0.3%	-0.6%

#### System Bias Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

#### Previous System Response to Calibration Gases ( $C_s$ )

$C_{oi}$	Zero gas	-0.018	0.029	0.442	1.214
$C_{ui}$	Upscale gas	20.840	5.135	83.183	854.099

#### Drift Assessment as Percent of Calibration Span Value (D) (%)

Zero gas	0.1%	0.0%	0.4%	0.0%
Upscale gas	0.0%	0.0%	2.3%	0.1%

#### Drift Assessment Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

101017 144057

13:38:50	21.532	0.110	14.961	15.438
13:39:05	21.489	0.109	13.813	14.332
13:39:20	21.378	0.108	14.582	15.193
13:39:35	16.125	0.963	10.171	10.119
13:39:50	1.353	0.501	7.609	7.691
13:40:05	0.071	0.061	6.753	6.995
13:40:20	0.028	0.039	6.190	6.512
13:40:35	0.016	0.034	5.769	6.162
13:40:50	0.011	0.031	5.400	5.908
13:41:05	0.005	0.030	5.100	5.646
13:41:20	-0.010	0.056	4.824	5.347
13:41:35	-0.027	0.054	4.705	5.295
13:41:50	6.724	1.480	3.108	3.751
13:42:05	19.583	16.832	2.347	3.001
13:42:20	20.800	20.561	2.191	2.828
13:42:35	20.832	20.769	2.067	2.701
13:42:50	20.838	20.792	1.947	2.609
13:43:05	20.840	20.788	1.842	2.495
13:43:20	20.835	20.794	1.748	2.432
13:43:35	20.837	20.831	1.666	2.331
13:43:50	20.839	20.859	1.572	2.255
13:44:05	20.836	20.850	1.497	2.171
13:44:20	20.837	20.810	1.414	2.134
13:44:35	20.839	20.750	1.339	2.097
13:44:50	20.835	20.755	1.265	2.013
13:45:05	20.850	20.761	1.198	1.953
13:45:20	20.532	20.781	1.598	2.344
13:45:35	9.770	12.111	1.844	2.600
13:45:50	5.276	5.853	1.773	2.524
13:46:05	5.032	5.330	1.699	2.470
13:46:20	5.012	5.264	1.632	2.390
13:46:35	5.004	5.221	1.559	2.344
13:46:50	4.998	5.197	1.504	2.280
13:47:05	5.003	5.201	1.440	2.237

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 15, 2017  
 Start Time 13:38  
 Stop Time 14:05

#### CALIBRATION BIAS 02

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
13:47:20	4.992	5.190	1.377	2.150
13:47:35	4.987	5.163	1.332	2.135
13:47:50	4.990	5.178	1.281	2.088
13:48:05	4.987	5.164	1.231	2.018
13:48:20	4.983	5.167	1.178	1.985
13:48:35	4.987	5.185	1.137	1.962
13:48:50	4.983	5.173	1.087	1.878
13:49:05	4.980	5.158	1.048	1.845
13:49:20	4.981	5.164	1.012	1.821
13:49:35	4.980	5.152	0.970	1.786
13:49:50	4.983	5.172	0.927	1.753
13:50:05	4.986	5.165	0.889	1.718
13:50:20	4.980	5.146	0.850	1.704
13:50:35	4.981	5.135	0.815	1.666
13:50:50	4.982	5.132	0.779	1.650
13:51:05	4.979	5.151	0.742	1.618
13:51:20	5.797	5.087	67.975	397.560
13:51:35	16.053	2.239	107.550	824.735
13:51:50	20.137	0.336	107.550	848.721
13:52:05	20.400	0.156	107.550	849.667
13:52:20	20.426	0.138	107.550	851.016
13:52:35	20.439	0.114	107.550	852.180
13:52:50	20.437	0.103	107.550	853.244
13:53:05	20.453	0.089	107.550	853.365
13:53:20	20.441	0.079	107.550	852.492
13:53:35	20.450	0.092	107.550	852.167
13:53:50	20.451	0.093	107.550	852.316
13:54:05	20.454	0.067	107.550	852.129
13:54:20	20.461	0.075	107.550	852.441
13:54:35	20.443	0.079	107.550	852.583
13:54:50	20.453	0.065	107.550	852.816
13:55:05	20.458	0.068	107.550	851.199
13:55:20	20.456	0.063	107.550	849.858
13:55:35	20.453	0.069	107.550	850.830
13:55:50	20.448	0.068	107.550	852.527
13:56:05	20.443	0.072	107.550	853.697
13:56:20	20.440	0.074	107.550	855.198
13:56:35	20.439	0.076	107.550	855.895
13:56:50	20.438	0.078	107.550	856.982
13:57:05	20.432	0.073	107.550	857.410
13:57:20	20.433	0.068	107.550	858.366
13:57:35	20.429	0.079	107.550	858.687
13:57:50	20.419	0.068	107.550	858.463
13:58:05	20.426	0.071	107.550	858.573
13:58:20	20.422	0.069	107.550	858.451
13:58:35	20.425	0.069	107.550	858.151
13:58:50	20.421	0.069	107.550	858.159
13:59:05	20.423	0.071	107.550	857.700
13:59:20	20.416	0.072	107.550	857.359
13:59:35	20.415	0.068	107.550	857.613
13:59:50	20.416	0.070	107.550	857.978
14:00:05	20.415	0.073	107.550	857.964
14:00:20	20.416	0.073	107.550	857.733
14:00:35	20.410	0.068	107.550	857.691
14:00:50	20.402	0.069	107.550	857.785
14:01:05	20.412	0.070	107.550	858.616
14:01:20	20.410	0.071	107.550	854.312
14:01:35	20.417	0.071	107.550	854.299
14:01:50	20.413	0.067	107.550	855.509
14:02:05	20.405	0.068	107.550	855.500
14:02:20	20.421	0.067	106.461	485.808
14:02:35	17.793	0.695	88.353	92.808
14:02:50	19.960	0.424	86.418	90.462
14:03:05	20.621	0.098	86.078	90.142

Sims Metal Management  
CleanAir Project No. 13318  
Johnston, RI  
TE Outlet

September 15, 2017  
Start Time 13:38  
Stop Time 14:05

CALIBRATION BIAS 02

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
14:03:20	20.653	0.076	85.904	89.778
14:03:35	20.660	0.071	85.709	89.715
14:03:50	20.654	0.071	85.569	89.997
14:04:05	20.652	0.066	85.524	90.045
14:04:20	20.651	0.067	85.412	89.807
14:04:35	20.648	0.060	85.302	89.575
14:04:50	20.642	0.076	78.523	81.773
14:05:05	15.596	0.073	5.076	5.684
14:05:20	1.800	0.053	0.927	1.793
14:05:35	0.125	0.042	0.832	1.707

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

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Start Time 7:17  
 Stop Time 7:56

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#### CALIBRATION ERROR

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv

#### Instrument Information

Manufacturer:	Servomex	Servomex	VIG	VIG
Model:	1420C	1415C	20	20
Detection:	Paramagn.	NDIR	FID	FID
Asset or Serial No:	68A	68A	210180	210180

#### Calibration Span Value (CS)

20.950 12.400 100.000 1000.000

#### System Response Time (seconds)

#### Manufacturer Certified Cylinder Value (C<sub>v</sub>)

Zero	0.000	0.000	0.000	0.000
Low	12.100	4.990	25.100	150.000
Mid			45.700	456.000
High	20.950	12.400	85.000	861.000

#### Actual gas to be used for bias checks

20.950 4.990 85.000 861.000

#### Cylinder ID

Zero	CNG896	CNG896	CNG896	CNG896
Low	ALM007968	CC58687	CC75663	ALM060770
Mid			EB0064387	ALM022481
High	CC263665	ALM007968	ALM023930	AAL21204

#### Analyzer Calibration Response (C<sub>dir</sub>)

Zero	0.018	-0.024	0.001	0.012				
Low	12.090	5.179	24.719	146.579				
Mid			44.886	449.354				
High	20.956	12.412	85.048	860.114				

#### Analyzer Calibration Error (ACE) (Limit = 2%, Method 25A limit = 5% of gas value)

Zero	0.1%	-0.2%	0.0%	0.0%
Low	0.0%	1.5%	-1.5%	-2.3%
Mid	N/A	N/A	-1.8%	-1.5%
High	0.0%	0.1%	0.1%	-0.1%

#### Calibration Error Status

Zero	OK	OK	OK	OK
Low	OK	OK	OK	OK
Mid	N/A	N/A	OK	OK
High	OK	OK	OK	OK

101017 144057

07:17:22	0.616	-0.022	-0.484	0.540
07:17:37	0.063	-0.023	-0.474	0.547
07:17:52	0.024	-0.028	-0.470	0.553
07:18:07	0.017	-0.023	-0.469	0.573
07:18:22	0.014	-0.019	-0.487	0.577
07:18:37	5.157	-0.022	-0.501	0.552
07:18:52	18.320	5.662	-0.502	0.540
07:19:07	20.800	19.085	-0.500	0.573
07:19:22	20.926	20.631	-0.505	0.546
07:19:37	20.930	20.749	-0.513	0.544
07:19:52	20.946	20.886	-0.519	0.531
07:20:07	20.958	20.911	-0.517	0.521
07:20:22	20.956	20.884	-0.531	0.538
07:20:37	20.955	20.925	-0.534	0.527
07:20:52	20.820	20.929	-0.531	0.523
07:21:07	14.125	12.963	-0.537	0.547
07:21:22	12.200	11.913	-0.548	0.526
07:21:37	12.103	12.056	-0.531	0.497
07:21:52	12.095	12.283	-0.523	0.512
07:22:07	12.090	12.359	-0.529	0.538
07:22:22	12.090	12.359	-0.542	0.551
07:22:37	12.090	12.392	-0.555	0.512
07:22:52	12.087	12.411	-0.552	0.529

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CALIBRATION ERROR

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
07:23:07	12.087	12.406	-0.547	0.555
07:23:22	12.085	12.419	-0.533	0.547
07:23:37	12.102	12.422	-0.522	0.524
07:23:52	10.144	7.617	-0.530	0.540
07:24:07	5.732	5.012	-0.525	0.563
07:24:22	5.090	5.171	-0.520	0.577
07:24:37	4.991	5.227	-0.501	0.586
07:24:52	4.975	5.248	-0.501	0.586
07:25:07	4.970	5.198	-0.504	0.564
07:25:22	4.967	5.164	-0.509	0.560
07:25:37	4.966	5.175	-0.515	0.548
07:25:52	4.965	5.182	-0.517	0.552
07:26:07	8.229	4.882	-0.457	0.619
07:26:22	19.381	0.888	0.836	1.999
07:26:37	7.461	0.465	-1.242	-0.191
07:26:52	0.629	0.067	-1.281	-0.244
07:27:07	0.002	-0.002	-1.301	-0.250
07:27:22	-0.049	-0.015	-0.484	-0.239
07:27:37	-0.058	-0.024	0.005	-0.203
07:27:52	-0.063	-0.022	0.005	0.011
07:28:07	-0.055	-0.021	-0.001	0.012
07:28:22	-0.013	-0.024	-0.001	0.011
07:28:37	-0.015	-0.017	0.002	0.036
07:28:52	-0.009	-0.020	0.004	0.053
07:29:07	-0.009	-0.020	0.053	0.101
07:29:22	9.558	4.555	-0.280	-0.244
07:29:37	19.841	18.286	-0.301	-0.259
07:29:52	20.751	20.519	-0.305	-0.293
07:30:07	20.802	20.816	-0.301	-0.269
07:30:22	20.796	20.958	-0.297	-0.259
07:30:37	20.795	21.030	-0.306	-0.246
07:30:52	20.797	21.078	-0.302	-0.247
07:31:07	20.792	21.098	-0.302	-0.277
07:31:22	20.791	21.141	-0.302	-0.255
07:31:37	20.789	21.129	-0.302	-0.224
07:31:52	20.787	21.154	-0.307	-0.258
07:32:07	20.790	21.161	-0.308	-0.250
07:32:22	20.783	21.172	-0.270	-0.224
07:32:37	14.183	16.842	-0.161	-0.123
07:32:52	5.830	7.088	-0.165	-0.129
07:33:07	5.039	5.627	-0.170	-0.103
07:33:22	4.979	5.404	-0.165	-0.124
07:33:37	4.976	5.322	-0.165	-0.124
07:33:52	4.973	5.267	-0.158	-0.122
07:34:07	4.970	5.220	-0.151	-0.142
07:34:22	4.977	5.191	-0.150	-0.136
07:34:37	4.969	5.181	-0.155	-0.080
07:34:52	4.967	5.164	-0.158	-0.120
07:35:07	4.967	5.164	-0.144	-0.132
07:35:22	4.968	5.159	-0.146	-0.146
07:35:37	4.969	5.159	-0.141	-0.141
07:35:52	4.971	5.155	-0.145	-0.130
07:36:07	4.960	5.163	-0.148	-0.134
07:36:22	4.964	5.170	-0.138	-0.115
07:36:37	4.967	5.167	-0.140	-0.152
07:36:52	4.965	5.167	-0.136	-0.156
07:37:07	4.965	5.163	-0.137	-0.147
07:37:22	4.965	5.175	-0.136	-0.130
07:37:37	7.886	4.710	40.281	43.401
07:37:52	18.098	1.400	85.284	88.292
07:38:07	20.474	0.253	85.650	88.371
07:38:22	20.625	0.125	85.717	88.778
07:38:37	20.644	0.093	85.644	88.397
07:38:52	20.653	0.073	85.596	88.717
07:39:07	20.661	0.060	85.639	88.543
07:39:22	20.666	0.048	85.542	88.551

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CALIBRATION ERROR

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
07:39:37	20.667	0.046	85.633	87.198
07:39:52	20.671	0.039	85.270	85.913
07:40:07	20.674	0.034	84.882	85.645
07:40:22	20.674	0.036	84.947	85.827
07:40:37	20.675	0.033	85.134	85.641
07:40:52	20.675	0.022	85.021	85.618
07:41:07	20.674	0.018	85.090	85.878
07:41:22	20.675	0.018	85.013	85.563
07:41:37	20.676	0.019	85.042	85.801
07:41:52	20.677	0.023	84.976	85.446
07:42:07	20.680	0.019	78.199	78.121
07:42:22	20.449	0.021	26.906	26.848
07:42:37	20.340	0.015	24.750	24.978
07:42:52	20.352	0.011	24.727	25.100
07:43:07	20.350	0.015	24.715	25.067
07:43:22	20.351	0.016	24.715	25.036
07:43:37	20.351	0.021	24.687	24.891
07:43:52	20.354	0.022	40.171	40.951
07:44:07	20.636	0.017	44.925	45.303
07:44:22	20.746	0.018	44.880	45.222
07:44:37	20.756	0.016	44.889	45.422
07:44:52	20.757	0.009	44.887	45.326
07:45:07	20.758	0.006	44.875	45.289
07:45:22	20.767	0.004	43.832	43.949
07:45:37	20.671	-0.004	102.882	702.200
07:45:52	20.437	0.002	107.550	862.854
07:46:07	20.450	-0.005	107.550	862.738
07:46:22	20.451	0.002	107.550	860.920
07:46:37	20.454	0.014	107.550	859.115
07:46:52	20.457	0.015	107.550	860.307
07:47:07	20.458	0.005	107.550	862.553
07:47:22	20.463	0.009	107.550	863.733
07:47:37	20.460	0.015	107.550	862.418
07:47:52	20.459	0.013	107.550	860.003
07:48:07	20.460	0.011	107.550	858.665
07:48:22	20.374	0.013	107.550	380.186
07:48:37	20.387	0.013	107.550	148.035
07:48:52	20.595	0.016	107.550	147.005
07:49:07	20.619	0.015	107.550	146.971
07:49:22	20.622	0.020	107.550	146.662
07:49:37	20.619	0.016	107.550	146.104
07:49:52	20.622	0.019	107.550	146.246
07:50:07	20.614	0.023	105.302	137.471
07:50:22	20.645	0.027	104.561	133.533
07:50:37	20.632	0.026	107.550	146.460
07:50:52	20.624	0.021	107.550	145.936
07:51:07	20.626	0.026	107.550	145.874
07:51:22	20.629	0.025	107.550	145.962
07:51:37	20.636	0.019	107.550	146.205
07:51:52	20.631	0.018	85.051	105.312
07:52:07	20.729	0.034	6.020	5.948
07:52:22	20.838	0.059	101.330	353.457
07:52:37	20.818	0.038	107.550	445.922
07:52:52	20.825	0.028	107.550	446.299
07:53:07	20.834	0.026	107.550	446.945
07:53:22	20.831	0.024	107.550	448.322
07:53:37	20.837	0.021	107.550	448.351
07:53:52	20.831	0.016	107.550	447.913
07:54:07	20.844	0.022	107.550	450.113
07:54:22	20.827	0.018	107.550	450.035
07:54:37	20.834	0.021	107.550	449.901
07:54:52	20.832	0.019	107.550	440.573
07:55:07	18.067	0.027	41.873	60.562
07:55:22	3.155	0.003	0.882	1.152
07:55:37	0.334	-0.014	0.452	0.790
07:55:52	0.078	-0.022	0.329	0.656

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CALIBRATION ERROR

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
07:56:07	0.054	-0.016	0.250	0.614

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#### CALIBRATION BIAS 00

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv

#### System Response to Calibration Gasses (Cs)

C <sub>o</sub>	Zero gas	-0.011	-0.019	0.001	0.012		
C <sub>u</sub>	Upscale gas	20.796	5.166	85.048	860.114		

#### Analyzer Calibration Error Responses (Cd<sub>ir</sub>)

C <sub>oce</sub>	Zero gas	0.018	-0.024	0.001	0.012
C <sub>mce</sub>	Upscale gas	20.956	5.179	85.048	860.114

#### Actual Upscale Gas Value (C<sub>ma</sub>)

C <sub>ma</sub>	Upscale gas	20.950	4.990	85.000	861.000
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#### Calibration Span Value (CS)

	20.950	12.400	100.000	1000.000
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#### System Bias as Percent of Calibration Span Value (SB) (5%)

Zero gas	-0.1%	0.0%	0.0%	0.0%
Upscale gas	-0.8%	-0.1%	0.0%	0.0%

#### System Bias Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

#### Previous System Response to Calibration Gases (Cs)

C <sub>oi</sub>	Zero gas	N/A	N/A	N/A	N/A
C <sub>ui</sub>	Upscale gas	N/A	N/A	N/A	N/A

#### Drift Assessment as Percent of Calibration Span Value (D) (3%)

Zero gas	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A

#### Drift Assessment Status

Zero gas	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A

101017 144057

07:27:07	0.002	-0.002	-1.301	-0.250
07:27:22	-0.049	-0.015	-0.484	-0.239
07:27:37	-0.058	-0.024	0.005	-0.203
07:27:52	-0.063	-0.022	0.005	0.011
07:28:07	-0.055	-0.021	-0.001	0.012
07:28:22	-0.013	-0.024	-0.001	0.011
07:28:37	-0.015	-0.017	0.002	0.036
07:28:52	-0.009	-0.020	0.004	0.053
07:29:07	-0.009	-0.020	0.053	0.101
07:29:22	9.558	4.555	-0.280	-0.244
07:29:37	19.841	18.286	-0.301	-0.259
07:29:52	20.751	20.519	-0.305	-0.293
07:30:07	20.802	20.816	-0.301	-0.269
07:30:22	20.796	20.958	-0.297	-0.259
07:30:37	20.795	21.030	-0.306	-0.246
07:30:52	20.797	21.078	-0.302	-0.247
07:31:07	20.792	21.098	-0.302	-0.277
07:31:22	20.791	21.141	-0.302	-0.255
07:31:37	20.789	21.129	-0.302	-0.224
07:31:52	20.787	21.154	-0.307	-0.258
07:32:07	20.790	21.161	-0.308	-0.250
07:32:22	20.783	21.172	-0.270	-0.224
07:32:37	14.183	16.842	-0.161	-0.123

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**CALIBRATION BIAS 00**

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
07:32:52	5.830	7.088	-0.165	-0.129
07:33:07	5.039	5.627	-0.170	-0.103
07:33:22	4.979	5.404	-0.165	-0.124
07:33:37	4.976	5.322	-0.165	-0.124
07:33:52	4.973	5.267	-0.158	-0.122
07:34:07	4.970	5.220	-0.151	-0.142
07:34:22	4.977	5.191	-0.150	-0.136
07:34:37	4.969	5.181	-0.155	-0.080
07:34:52	4.967	5.164	-0.158	-0.120
07:35:07	4.967	5.164	-0.144	-0.132
07:35:22	4.968	5.159	-0.146	-0.146
07:35:37	4.969	5.159	-0.141	-0.141
07:35:52	4.971	5.155	-0.145	-0.130
07:36:07	4.960	5.163	-0.148	-0.134
07:36:22	4.964	5.170	-0.138	-0.115
07:36:37	4.967	5.167	-0.140	-0.152
07:36:52	4.965	5.167	-0.136	-0.156
07:37:07	4.965	5.163	-0.137	-0.147
07:37:22	4.965	5.175	-0.136	-0.130
07:37:37	7.886	4.710	40.281	43.401
07:37:52	18.098	1.400	85.284	88.292
07:38:07	20.474	0.253	85.650	88.371
07:38:22	20.625	0.125	85.717	88.778
07:38:37	20.644	0.093	85.644	88.397
07:38:52	20.653	0.073	85.596	88.717
07:39:07	20.661	0.060	85.639	88.543
07:39:22	20.666	0.048	85.542	88.551
07:39:37	20.667	0.046	85.633	87.198
07:39:52	20.671	0.039	85.270	85.913
07:40:07	20.674	0.034	84.882	85.645
07:40:22	20.674	0.036	84.947	85.827
07:40:37	20.675	0.033	85.134	85.641
07:40:52	20.675	0.022	85.021	85.618
07:41:07	20.674	0.018	85.090	85.878
07:41:22	20.675	0.018	85.013	85.563
07:41:37	20.676	0.019	85.042	85.801
07:41:52	20.677	0.023	84.976	85.446
07:42:07	20.680	0.019	78.199	78.121
07:42:22	20.449	0.021	26.906	26.848
07:42:37	20.340	0.015	24.750	24.978
07:42:52	20.352	0.011	24.727	25.100
07:43:07	20.350	0.015	24.715	25.067
07:43:22	20.351	0.016	24.715	25.036
07:43:37	20.351	0.021	24.687	24.891
07:43:52	20.354	0.022	40.171	40.951
07:44:07	20.636	0.017	44.925	45.303
07:44:22	20.746	0.018	44.880	45.222
07:44:37	20.756	0.016	44.889	45.422
07:44:52	20.757	0.009	44.887	45.326
07:45:07	20.758	0.006	44.875	45.289

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**TE Outlet**

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**CALIBRATION BIAS 00**

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
07:45:22	20.767	0.004	43.832	43.949
07:45:37	20.671	-0.004	102.882	702.200
07:45:52	20.437	0.002	107.550	862.854
07:46:07	20.450	-0.005	107.550	862.738
07:46:22	20.451	0.002	107.550	860.920
07:46:37	20.454	0.014	107.550	859.115
07:46:52	20.457	0.015	107.550	860.307
07:47:07	20.458	0.005	107.550	862.553
07:47:22	20.463	0.009	107.550	863.733
07:47:37	20.460	0.015	107.550	862.418
07:47:52	20.459	0.013	107.550	860.003
07:48:07	20.460	0.011	107.550	858.665
07:48:22	20.374	0.013	107.550	380.186
07:48:37	20.387	0.013	107.550	148.035
07:48:52	20.595	0.016	107.550	147.005
07:49:07	20.619	0.015	107.550	146.971
07:49:22	20.622	0.020	107.550	146.662
07:49:37	20.619	0.016	107.550	146.104
07:49:52	20.622	0.019	107.550	146.246
07:50:07	20.614	0.023	105.302	137.471
07:50:22	20.645	0.027	104.561	133.533
07:50:37	20.632	0.026	107.550	146.460
07:50:52	20.624	0.021	107.550	145.936
07:51:07	20.626	0.026	107.550	145.874
07:51:22	20.629	0.025	107.550	145.962
07:51:37	20.636	0.019	107.550	146.205
07:51:52	20.631	0.018	85.051	105.312
07:52:07	20.729	0.034	6.020	5.948
07:52:22	20.838	0.059	101.330	353.457
07:52:37	20.818	0.038	107.550	445.922
07:52:52	20.825	0.028	107.550	446.299
07:53:07	20.834	0.026	107.550	446.945
07:53:22	20.831	0.024	107.550	448.322
07:53:37	20.837	0.021	107.550	448.351
07:53:52	20.831	0.016	107.550	447.913
07:54:07	20.844	0.022	107.550	450.113
07:54:22	20.827	0.018	107.550	450.035
07:54:37	20.834	0.021	107.550	449.901
07:54:52	20.832	0.019	107.550	440.573
07:55:07	18.067	0.027	41.873	60.562
07:55:22	3.155	0.003	0.882	1.152
07:55:37	0.334	-0.014	0.452	0.790
07:55:52	0.078	-0.022	0.329	0.656
07:56:07	0.054	-0.016	0.250	0.614

**Sims Metal Management**  
**CleanAir Project No. 13318**  
**Johnston, RI**  
**TE Outlet**

September 18, 2017  
Start Time 7:27  
Stop Time 7:56

**CALIBRATION BIAS 00**

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv

16:20:46	20.368	0.063	25.214	25.268
16:21:01	20.372	0.066	25.263	25.412
16:21:16	20.363	0.074	25.252	25.403
16:21:31	20.368	0.076	25.260	25.296
16:21:46	20.374	0.079	26.598	26.831
16:22:01	20.445	0.089	44.562	45.989
16:22:16	20.719	0.085	45.713	47.016
16:22:31	20.773	0.068	45.695	46.928
16:22:46	20.78938	0.072213	45.68756	47.061882
16:23:01	20.786664	0.072597	37.834204	38.079333
16:23:16	20.807896	0.078138	7.115912	6.102947
16:23:31	17.046593	0.089879	2.679477	1.368664
16:23:46	2.736824	0.044563	0.841481	-0.463749
16:24:01	0.013978	0.046538	0.813896	-0.467033
16:24:16	-0.262526	0.041601	0.809956	-0.483453
16:24:31	-0.301121	0.046675	0.817837	0.1175
16:24:46	-0.316592	0.043356	0.820902	0.272938
16:25:01	-0.110531	0.041957	37.329469	197.777363
16:25:16	10.531701	0.068647	107.549709	906.817883
16:25:31	19.068764	0.073667	107.549709	855.369742
16:25:46	20.272816	0.059431	107.549709	861.459348
16:26:01	20.402841	0.049775	107.549709	858.797129
16:26:16	20.426899	0.048595	107.549709	860.439123
16:26:31	20.434881	0.057702	107.549709	860.504803
16:26:46	20.441053	0.072515	107.549709	856.41405
16:27:01	20.459103	0.084009	79.372337	335.553154
16:27:16	20.690324	0.104774	64.142475	165.311869
16:27:31	20.701077	0.109382	107.549709	160.973682
16:27:46	20.614915	0.089138	107.549709	158.916867
16:28:01	20.607481	0.084201	107.549709	158.86323
16:28:16	20.614531	0.079812	107.549709	158.782227
16:28:31	20.612034	0.079099	107.549709	158.874177
16:28:46	20.613763	0.079044	107.549709	158.690278
16:29:01	20.616067	0.077069	107.549709	158.750483
16:29:16	20.622404	0.078193	107.549709	158.449459
16:29:31	20.618344	0.068675	107.549709	158.497623
16:29:46	20.621992	0.068401	107.549709	158.47792
16:30:01	20.615875	0.077727	107.549709	151.432865

**Sims Metal Management**  
**CleanAir Project No. 13318**  
**Johnston, RI**  
**TE Outlet**

September 18, 2017  
Start Time 7:27  
Stop Time 7:56

**CALIBRATION BIAS 00**

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
16:30:16	20.616835	0.078111	107.549709	139.514506
16:30:31	20.612912	0.079208	107.549709	141.018531
16:30:46	20.613241	0.080278	107.549709	461.686825
16:31:01	20.532318	0.083186	107.549709	827.662782
16:31:16	20.471914	0.0825	107.549709	856.926352
16:31:31	20.465742	0.081759	107.549709	512.378749
16:31:46	20.538216	0.080635	107.549709	149.462526
16:32:01	20.605753	0.074079	107.549709	146.567223
16:32:16	20.617082	0.07246	107.549709	146.752216
16:32:31	20.615024	0.073503	100.445908	128.69188
16:32:46	20.650055	0.074051	8.997914	7.990092
16:33:01	20.825672	0.101345	65.144153	158.133255
16:33:16	20.776322	0.107572	107.549709	441.463071
16:33:31	20.800736	0.080251	107.549709	446.977864
16:33:46	20.809103	0.080717	107.549709	446.168926
16:34:01	20.808938	0.085106	107.549709	448.607783
16:34:16	20.811791	0.080744	107.549709	447.610566
16:34:31	20.808116	0.078797	107.549709	447.022745
16:34:46	20.803617	0.074902	107.549709	448.22247
16:35:01	20.804412	0.0794	107.549709	446.657135
16:35:16	20.803562	0.073667	107.549709	447.386165
16:35:31	20.804577	0.075971	60.871674	141.964473
16:35:46	20.811901	0.099507	38.066876	43.193457
16:36:01	20.145314	3.191356	4.741216	4.030809
16:36:16	18.683518	4.88771	1.406311	1.064357
16:36:31	13.41204	9.473758	0.961015	0.669195
16:36:46	12.109581	11.742141	0.910224	0.614463
16:37:01	11.932047	12.003368	0.884719	0.60899
16:37:16	11.928728	12.059492	0.876181	0.544407
16:37:31	11.921459	12.114162	0.854617	0.566299
16:37:46	11.925326	12.129578	0.85385	0.526892
16:38:01	11.917838	12.121377	0.840167	0.524703
16:38:16	11.915506	12.123928	0.840934	0.555353
16:38:31	11.914902	12.125574	0.843123	0.525798
16:38:46	11.910513	12.095893	0.840277	0.505
16:39:01	11.908511	12.075457	0.832943	0.520325
16:39:16	11.901982	12.100776	0.838635	0.476539
16:39:31	11.911474	12.103245	0.9967	0.662627
16:39:46	8.973965	10.224765	1.167462	0.810402
16:40:01	5.355544	6.127039	1.164616	0.750197
16:40:16	4.814276	5.311956	1.1598	0.766617
16:40:31	4.758756	5.178093	1.158924	0.80274
16:40:46	4.739609	5.169425	1.149948	0.793983
16:41:01	4.736866	5.1714	1.148854	0.796172
16:41:16	4.732916	5.15752	1.146008	0.781942
16:41:31	4.731819	5.154859	1.142943	0.753481
16:41:46	4.73629	5.159549	1.146445	0.756765
16:42:01	4.736592	5.174198	1.134404	0.732683
16:42:16	5.301752	5.252513	0.780401	0.346278
16:42:31	15.431453	13.004971	0.674112	0.23572
16:42:46	20.11256	19.68825	0.669624	0.213828
16:43:01	20.697923	20.752045	0.652548	0.229153
16:43:16	20.78318	20.860592	0.643353	0.268559
16:43:31	20.894607	20.919872	0.659006	0.26637
16:43:46	20.96859	20.764746	0.648388	0.275127

**Sims Metal Management**  
**CleanAir Project No. 13318**  
**Johnston, RI**  
**TE Outlet**

September 18, 2017  
Start Time 7:27  
Stop Time 7:56

**CALIBRATION BIAS 00**

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
16:44:01	20.971251	20.821804	0.645761	0.276222
16:44:16	20.97073	20.996379	0.649264	0.305777
16:44:31	20.972925	21.036456	0.639631	0.288263
16:44:46	20.972376	21.021095	0.637004	0.277316
16:45:01	20.969962	21.01602	0.638755	0.267465
16:45:16	20.968289	21.021506	0.631202	0.25214
16:45:31	20.973583	21.031793	0.703338	0.334237
16:45:46	18.343508	19.42609	0.806453	0.48858
16:46:01	13.091123	13.654614	0.806015	0.496243
16:46:16	12.154678	12.430361	0.806453	0.480918
16:46:31	12.031348	12.256173	0.796054	0.459025
16:46:46	12.011295	12.206907	0.793864	0.428376
16:47:01	11.998156	12.255295	0.795069	0.452458
16:47:16	12.009074	12.44265	0.785436	0.428376
16:47:31	12.008004	12.45546	0.774708	0.44589
16:47:46	12.002298	12.46166	0.772957	0.441511
16:48:01	12.005864	12.383454	0.76825	0.399915
16:48:16	12.01349	12.382658	0.764419	0.414145
16:48:31	12.01135	12.406359	0.761573	0.419619
16:48:46	12.007647	12.403012	0.76223	0.430565
16:49:01	12.010665	12.394097	0.75391	0.410862
16:49:16	12.004355	12.374511	0.895227	0.557542
16:49:31	8.91636	10.352649	1.037311	0.676857
16:49:46	5.40448	6.28463	1.034683	0.675762
16:50:01	4.866148	5.452484	1.031837	0.706412
16:50:16	4.797818	5.316646	1.02516	0.645113
16:50:31	4.787751	5.29248	1.012025	0.679046
16:50:46	4.77911	5.278517	0.999984	0.645113
16:51:01	4.777519	5.275061	0.990898	0.662627
16:51:16	4.778205	5.275006	0.983783	0.679046
16:51:31	4.771649	5.262251	0.97634	0.657154
16:51:46	4.764736	5.254515	0.965612	0.652775
16:52:01	4.768604	5.254323	0.978419	0.673573
16:52:16	4.771978	5.252047	0.979624	0.663721
16:52:31	4.82854	5.249084	1.586159	1.120183

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 18, 2017  
 Start Time 8:38  
 Stop time 9:53

**REFERENCE METHOD RUN 3**

	Channel	1	2	3	4
		O2	CO2	THC	THC
		Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
<b>Calibration Checks</b>					
C <sub>oi</sub>	Initial zero	-0.011	-0.019	0.001	0.012
C <sub>ui</sub>	Initial upscale	20.796	5.166	85.048	860.114
C <sub>of</sub>	Final zero	0.000	0.021	2.699	2.988
C <sub>uf</sub>	Final upscale	20.811	5.173	86.336	859.794
C <sub>ma</sub>	Actual gas value	20.950	4.990	85.000	861.000
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub>	Average conc.	20.819	0.094	104.718	522.975
C <sub>Gas</sub>	Bias adjusted	20.966	0.090	104.174	523.022

Clock Time (at end of sample period)

101017 144057

8:16	20.841	0.069	0.901	1.219	
8:17	20.845	0.073	0.972	1.284	
8:18	20.851	0.072	0.910	1.222	
8:19	20.856	0.072	0.828	1.128	
8:20	20.855	0.072	0.830	1.143	
8:21	20.858	0.074	0.808	1.143	
8:22	20.849	0.073	0.813	1.157	
8:23	20.840	0.074	0.799	1.134	
8:24	20.837	0.074	0.826	1.166	
8:25	20.834	0.077	0.878	1.215	
8:26	20.829	0.077	0.918	1.223	
8:27	20.827	0.078	0.918	1.213	
8:28	20.825	0.077	0.915	1.214	
8:29	20.821	0.078	0.920	1.206	
8:30	20.820	0.079	0.926	1.240	
8:31	20.813	0.078	1.273	1.551	
8:32	20.813	0.077	1.241	1.513	
8:33	20.813	0.077	1.192	1.476	
8:34	20.831	0.079	1.336	1.604	
8:35	20.834	0.076	1.254	1.531	
8:36	20.842	0.076	13.560	13.437	
8:37	20.831	0.078	85.387	360.902	
8:38	20.827	0.078	107.550	713.801	Start Run
8:39	20.815	0.081	107.550	860.264	
8:40	20.836	0.079	107.550	490.257	
8:41	20.836	0.090	107.550	353.627	
8:42	20.823	0.085	104.285	312.760	
8:43	20.811	0.084	105.298	332.032	
8:44	20.811	0.086	107.550	384.508	
8:45	20.811	0.089	106.249	299.519	
8:46	20.813	0.085	106.723	452.008	
8:47	20.818	0.085	107.304	387.346	
8:48	20.799	0.088	107.436	427.247	
8:49	20.814	0.085	58.913	63.717	
8:50	20.816	0.083	76.296	130.777	

**Sims Metal Management**  
**CleanAir Project No. 13318**  
**Johnston, RI**  
**TE Outlet**

September 18, 2017  
Start Time 8:38  
Stop time 9:53

**REFERENCE METHOD RUN 3**

Channel	1	2	3	4
	O2	CO2	THC	THC
	<b>Stack Hi %dv</b>	<b>Stack Hi %dv</b>	<b>Stack Lo ppmwv</b>	<b>Stack Hi ppmwv</b>
8:51	20.808	0.085	99.286	176.409
8:52	20.810	0.087	92.676	138.526
8:53	20.819	0.079	92.670	177.432
8:54	20.821	0.079	107.550	560.713
8:55	20.810	0.085	107.550	684.260
8:56	20.835	0.084	100.543	216.830
8:57	20.840	0.087	102.169	196.175
8:58	20.842	0.086	93.930	193.825
8:59	20.845	0.087	107.537	258.871
9:00	20.836	0.087	106.556	214.569
9:01	20.822	0.092	107.550	372.514
9:02	20.848	0.087	104.711	236.913
9:03	20.851	0.086	107.550	423.279
9:04	20.846	0.085	105.247	234.090
9:05	20.846	0.089	95.635	185.867
9:06	20.834	0.093	105.920	576.790
9:07	20.821	0.088	106.581	456.437
9:08	20.817	0.088	107.550	443.030
9:09	20.816	0.090	95.521	308.688
9:10	20.827	0.088	21.282	23.086
9:11	20.825	0.085	13.007	14.700
9:12	20.823	0.084	11.880	13.666
9:13	20.820	0.080	9.244	10.536
9:14	20.820	0.085	6.620	7.665
9:15	20.815	0.086	5.634	6.545
9:16	20.813	0.086	4.983	5.851
9:17	20.810	0.087	4.546	5.349
9:18	20.812	0.086	4.213	4.985
9:19	20.826	0.086	37.448	45.025
9:20	20.813	0.088	107.550	693.748
9:21	20.838	0.089	102.087	309.812
9:22	20.834	0.090	107.550	526.125
9:23	20.827	0.091	107.550	638.046
9:24	20.826	0.091	107.550	688.264
9:25	20.827	0.091	107.550	548.433
9:26	20.829	0.096	107.550	435.711
9:27	20.812	0.110	107.550	472.642
9:28	20.817	0.089	107.550	638.484
9:29	20.814	0.094	107.550	883.474
9:30	20.795	0.099	107.550	948.787
9:31	20.795	0.115	107.550	767.903
9:32	20.807	0.100	107.550	666.993
9:33	20.805	0.097	107.550	634.081
9:34	20.798	0.107	107.550	776.398
9:35	20.798	0.107	107.550	760.053
9:36	20.782	0.104	107.550	937.959
9:37	20.796	0.101	107.550	763.661
9:38	20.782	0.109	107.550	867.801
9:39	20.793	0.100	107.550	840.224

**Sims Metal Management**  
**CleanAir Project No. 13318**  
**Johnston, RI**  
**TE Outlet**

September 18, 2017  
Start Time 8:38  
Stop time 9:53

**REFERENCE METHOD RUN 3**

Channel	1	2	3	4
	O2	CO2	THC	THC
	<b>Stack Hi %dv</b>	<b>Stack Hi %dv</b>	<b>Stack Lo ppmwv</b>	<b>Stack Hi ppmwv</b>
9:40	20.808	0.099	107.550	861.592
9:41	20.814	0.100	107.550	983.805
9:42	20.807	0.109	107.550	688.930
9:43	20.816	0.104	107.550	617.397
9:44	20.824	0.103	107.550	677.395
9:45	20.824	0.098	107.550	450.340
9:46	20.820	0.107	107.550	430.416
9:47	20.822	0.109	107.550	603.534
9:48	20.814	0.103	107.550	966.878
9:49	20.839	0.101	107.550	570.522
9:50	20.834	0.101	107.550	682.988
9:51	20.830	0.103	107.550	473.148
9:52	20.822	0.108	107.397	537.443
9:53	20.807	0.107	107.550	576.835
9:54	<b>20.807</b>	<b>0.102</b>	<b>63.298</b>	<b>100.600</b>

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 18, 2017  
 Start Time 9:58  
 Stop Time 10:13

### CALIBRATION BIAS 03

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv

#### System Response to Calibration Gasses ( $C_s$ )

$C_{oi}$	Zero gas	0.000	0.021	2.699	2.988		
$C_{ui}$	Upscale gas	20.811	5.173	86.336	859.794		

#### Analyzer Calibration Error Responses ( $C_{dir}$ )

$C_{oce}$	Zero gas	0.018	-0.024	0.001	0.012
$C_{mce}$	Upscale gas	20.956	5.179	85.048	860.114

#### Actual Upscale Gas Value ( $C_{MA}$ )

$C_{ma}$	Upscale gas	20.950	4.990	85.000	861.000
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#### Calibration Span Value (CS)

20.950	12.400	100.000	1000.000
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#### System Bias as Percent of Calibration Span Value (SB) (%)

Zero gas	-0.1%	0.4%	2.7%	0.3%
Upscale gas	-0.7%	0.0%	1.3%	0.0%

#### System Bias Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

#### Previous System Response to Calibration Gasses ( $C_s$ )

$C_{oi}$	Zero gas	-0.011	-0.019	0.001	0.012
$C_{ui}$	Upscale gas	20.796	5.166	85.048	860.114

#### Drift Assessment as Percent of Calibration Span Value (D) (%)

Zero gas	0.1%	0.3%	2.7%	0.3%
Upscale gas	0.1%	0.1%	1.3%	0.0%

#### Drift Assessment Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

101017 144057

09:58:11	0.386	0.031	7.998	6.604
09:58:26	0.030	0.022	7.390	6.233
09:58:41	0.015	0.021	6.966	6.648
09:58:56	0.001	0.021	6.649	6.481
09:59:11	0.006	0.021	6.388	6.319
09:59:26	0.001	0.021	6.168	6.135
09:59:41	-0.006	0.021	5.960	5.967
09:59:56	2.999	0.027	6.782	6.962
10:00:11	16.538	8.475	4.062	4.236
10:00:26	20.754	20.211	3.743	3.941
10:00:41	20.847	20.961	3.609	3.706
10:00:56	20.829	21.116	3.494	3.582
10:01:11	20.819	21.212	3.394	3.471
10:01:26	20.809	21.268	3.301	3.408
10:01:41	20.804	21.329	3.231	3.361
10:01:56	17.124	19.435	3.966	4.075
10:02:11	5.806	7.341	3.996	4.080
10:02:26	4.997	5.670	3.892	4.030
10:02:41	4.973	5.504	3.817	3.949
10:02:56	4.969	5.427	3.734	3.888
10:03:11	4.968	5.388	3.674	3.776
10:03:26	4.967	5.242	3.605	3.776
10:03:41	4.960	5.210	3.542	3.706
10:03:56	4.968	5.189	3.482	3.640
10:04:11	4.963	5.174	3.421	3.594
10:04:26	4.962	5.172	3.360	3.544
10:04:41	4.962	5.173	3.375	3.521
10:04:56	10.188	4.242	96.486	330.500
10:05:11	19.964	0.677	107.550	433.421
10:05:26	20.682	0.226	107.550	434.640
10:05:41	20.708	0.169	107.550	432.650
10:05:56	20.659	0.145	107.550	601.547
10:06:11	20.400	0.130	107.550	825.539
10:06:26	20.394	0.107	107.550	859.086

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 18, 2017  
 Start Time 9:58  
 Stop Time 10:13

CALIBRATION BIAS 03

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
10:06:41	20.400	0.098	107.550	856.497
10:06:56	20.403	0.091	107.550	858.540
10:07:11	20.409	0.083	107.550	855.641
10:07:26	20.427	0.077	107.550	855.586
10:07:41	20.403	0.075	107.550	854.235
10:07:56	20.394	0.073	107.550	854.134
10:08:11	20.388	0.070	107.550	854.575
10:08:26	20.390	0.070	107.550	859.746
10:08:41	20.390	0.069	107.550	858.450
10:08:56	20.389	0.066	107.550	861.187
10:09:11	20.386	0.069	107.550	857.199
10:09:26	20.409	0.068	107.550	773.493
10:09:41	20.512	0.067	104.346	200.490
10:09:56	20.624	0.067	89.923	86.633
10:10:11	20.630	0.064	89.060	86.076
10:10:26	20.637	0.062	88.765	85.805
10:10:41	20.640	0.058	88.571	85.626
10:10:56	20.637	0.059	87.951	85.536
10:11:11	20.661	0.057	86.628	85.421
10:11:26	20.658	0.056	86.480	85.162
10:11:41	20.674	0.056	86.332	85.024
10:11:56	20.671	0.057	86.196	84.896
10:12:11	20.186	0.057	52.869	51.126
10:12:26	4.214	0.036	3.478	3.695
10:12:41	0.159	0.027	2.936	3.179
10:12:56	0.038	0.027	2.862	3.075
10:13:11	0.025	0.027	2.787	3.072
10:13:26	0.015	0.026	2.744	3.049
10:13:41	0.007	0.027	2.699	2.981
10:13:56	0.003	0.026	2.653	2.933

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 18, 2017  
 Start Time 11:14  
 Stop time 12:33

REFERENCE METHOD RUN 4

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
<b>Calibration Checks</b>				
$C_{oi}$ Initial zero	0.000	0.021	2.699	2.988
$C_{ui}$ Initial upscale	20.811	5.173	86.336	859.794
$C_{of}$ Final zero	-0.008	0.041	2.689	3.015
$C_{uf}$ Final upscale	20.794	5.184	86.792	861.434
$C_{ma}$ Actual gas value	20.950	4.990	85.000	861.000
<b>Analyzer Averages (concentrations)</b>				
$C_{Avg}$ Average conc.	20.788	0.116	106.135	373.912
$C_{Gas}$ Bias adjusted	20.935	0.082	104.835	372.375

Clock Time (at end of sample period)

101017 144057	11:03	20.805	0.105	1.942	2.350	
	11:04	20.796	0.106	1.912	2.332	
	11:05	20.799	0.106	1.920	2.305	
	11:06	20.801	0.106	2.045	2.421	
	11:07	20.801	0.106	2.735	3.105	
	11:08	20.798	0.106	2.735	3.074	
	11:09	20.801	0.106	2.635	2.970	
	11:10	20.799	0.106	2.581	2.907	
	11:11	20.801	0.107	2.706	3.051	
	11:12	20.810	0.107	2.690	3.041	
	11:13	20.800	0.108	53.403	54.491	
	11:14	20.800	0.109	50.584	82.018	Start Run
	11:15	20.784	0.113	105.847	390.689	
	11:16	20.783	0.111	107.277	298.854	
	11:17	20.781	0.113	104.993	177.935	
	11:18	20.779	0.113	103.562	217.561	
	11:19	20.790	0.119	102.110	179.240	
	11:20	20.806	0.113	106.600	160.613	
	11:21	20.808	0.113	107.550	430.542	
	11:22	20.796	0.122	107.550	478.898	
	11:23	20.788	0.115	107.371	313.840	
	11:24	20.797	0.113	107.347	402.488	
	11:25	20.804	0.116	107.550	539.869	
	11:26	20.808	0.113	106.139	248.031	
	11:27	20.805	0.109	107.550	438.242	
	11:28	20.817	0.107	104.613	178.022	
	11:29	20.817	0.109	101.408	172.543	
	11:30	20.818	0.109	107.550	681.565	
	11:31	20.814	0.110	102.662	261.115	
	11:32	20.795	0.111	107.550	376.848	
	11:33	20.796	0.109	107.550	787.062	
	11:34	20.807	0.108	104.256	219.308	
	11:35	20.778	0.110	107.550	646.112	
	11:36	20.775	0.106	107.550	416.728	
	11:37	20.760	0.115	107.550	479.553	
	11:38	20.776	0.114	107.550	391.160	
	11:39	20.774	0.108	107.550	351.008	
	11:40	20.778	0.114	104.604	189.016	
	11:41	20.765	0.112	107.550	488.838	
	11:42	20.764	0.113	107.550	406.925	
	11:43	20.772	0.111	107.360	199.642	
	11:44	20.776	0.108	100.844	264.406	Pause Run for Port Change
	11:45	20.776	0.106	93.028	116.285	
	11:46	20.775	0.106	22.535	21.871	
	11:47	20.782	0.105	11.564	11.279	

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 18, 2017  
 Start Time 11:14  
 Stop time 12:33

REFERENCE METHOD RUN 4

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
11:48	20.773	0.105	10.895	10.808
11:49	20.781	0.105	8.574	8.574
11:50	20.813	0.105	7.180	7.206
11:51	20.798	0.105	6.432	6.466
11:52	20.800	0.106	5.893	5.973
11:53	20.808	0.106	5.428	5.523
11:54	20.828	0.107	5.068	5.205
11:55	20.834	0.106	4.766	4.985
11:56	20.826	0.108	4.684	4.916
11:57	20.830	0.109	4.566	4.812
11:58	20.839	0.110	4.423	4.694
11:59	20.841	0.110	4.181	4.475
12:00	20.853	0.110	4.000	4.299
12:01	20.846	0.109	3.906	4.245
12:02	20.819	0.107	52.225	52.430
12:03	20.825	0.110	87.216	99.725
				Restart Run 4
12:04	20.797	0.116	107.550	283.824
12:05	20.804	0.112	103.216	150.482
12:06	20.805	0.112	104.788	228.333
12:07	20.797	0.114	107.550	436.773
12:08	20.783	0.113	107.550	383.547
12:09	20.754	0.119	107.550	570.911
12:10	20.767	0.129	107.270	436.648
12:11	20.757	0.117	107.550	642.705
12:12	20.762	0.113	107.550	257.064
12:13	20.755	0.114	107.550	404.160
12:14	20.766	0.120	107.550	425.157
12:15	20.769	0.116	107.550	320.151
12:16	20.750	0.114	107.550	509.368
12:17	20.753	0.114	107.550	536.583
12:18	20.748	0.115	107.550	409.086
12:19	20.761	0.115	107.550	438.328
12:20	20.791	0.116	107.138	361.619
12:21	20.796	0.116	107.550	313.079
12:22	20.798	0.120	107.550	427.467
12:23	20.793	0.118	107.550	566.809
12:24	20.801	0.114	107.550	393.754
12:25	20.784	0.116	107.550	386.301
12:26	20.780	0.120	107.550	589.465
12:27	20.789	0.118	107.550	394.303
12:28	20.801	0.114	107.550	363.223
12:29	20.813	0.169	105.418	149.990
12:30	20.808	0.154	104.644	341.591
12:31	20.819	0.118	106.728	381.164
12:32	20.816	0.115	97.182	408.616
12:33	20.836	0.113	90.504	137.546
12:34	20.843	0.113	63.024	65.703
12:35	20.833	0.112	15.018	14.851
12:36	20.807	0.111	15.496	15.531

Sims Metal Management  
CleanAir Project No. 13318  
Johnston, RI  
TE Outlet

September 18, 2017  
Start Time 12:37  
Stop Time 12:51

CALIBRATION BIAS 04

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmw	Stack Hi ppmw

System Response to Calibration Gasses (Cs)

C <sub>o2</sub> Zero gas	-0.008	0.041	2.689	3.015
C <sub>o2</sub> Upscale gas	20.794	5.184	66.792	861.434

Analyzer Calibration Error Responses (C<sub>de</sub>)

C <sub>co2</sub> Zero gas	0.018	-0.024	0.001	0.012
C <sub>co2</sub> Upscale gas	20.956	5.179	85.048	860.114

Actual Upscale Gas Value (C<sub>MA</sub>)

C <sub>ma</sub> Upscale gas	20.950	4.990	85.000	861.000
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Calibration Span Value (CS)

20.950	12.400	100.000	1000.000
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System Bias as Percent of Calibration Span Value (SB) (%)

Zero gas	-0.1%	0.5%	2.7%	0.3%
Upscale gas	-0.8%	0.0%	1.7%	0.1%

System Bias Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

Previous System Response to Calibration Gases (Cs)

C <sub>o2</sub> Zero gas	0.000	0.021	2.699	2.988
C <sub>o2</sub> Upscale gas	20.811	5.173	86.336	859.794

Drift Assessment as Percent of Calibration Span Value (D) (%)

Zero gas	0.0%	0.2%	0.0%	0.0%
Upscale gas	-0.1%	0.1%	0.5%	0.2%

Drift Assessment Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

101017 144057

12:37:39	20.801	0.114	10.854	11.017
12:37:54	20.800	0.114	10.506	10.677
12:38:09	20.800	0.114	10.065	10.258
12:38:24	20.802	0.114	9.842	10.050
12:38:39	20.801	0.115	9.745	9.884
12:38:54	20.787	0.114	9.702	9.844
12:39:09	20.807	0.114	9.478	9.630
12:39:24	20.803	0.113	9.008	9.230
12:39:39	16.566	0.110	8.878	8.906
12:39:54	1.579	0.059	5.364	5.382
12:40:09	0.095	0.043	4.913	4.991
12:40:24	0.025	0.042	4.651	4.781
12:40:39	0.013	0.041	4.442	4.621
12:40:54	0.002	0.040	4.291	4.454
12:41:09	-0.006	0.040	4.164	4.367
12:41:24	-0.008	0.041	4.061	4.301
12:41:39	-0.010	0.041	3.973	4.225
12:41:54	6.016	1.675	3.187	3.512
12:42:09	19.702	17.104	2.419	2.760
12:42:24	20.791	20.212	2.361	2.714
12:42:39	20.806	20.543	2.314	2.661
12:42:54	20.793	20.701	2.262	2.612
12:43:09	20.784	20.799	2.219	2.578
12:43:24	20.772	20.859	2.214	2.566
12:43:39	15.102	17.439	2.823	3.161
12:43:54	5.594	6.919	2.804	3.141
12:44:09	5.000	5.683	2.747	3.095
12:44:24	4.975	5.485	2.709	3.092
12:44:39	4.966	5.383	2.663	3.020
12:44:54	4.965	5.316	2.623	2.988
12:45:09	4.965	5.273	2.584	2.937
12:45:24	4.962	5.243	2.547	2.892
12:45:39	4.957	5.216	2.519	2.876
12:45:54	4.952	5.200	2.490	2.856
12:46:09	4.953	5.191	2.454	2.833
12:46:24	4.953	5.182	2.424	2.795
12:46:39	4.954	5.179	2.767	3.395
12:46:54	10.349	4.229	77.520	77.787
12:47:09	19.804	0.726	86.554	86.541
12:47:24	20.534	0.285	86.571	86.601
12:47:39	20.588	0.210	86.782	86.520
12:47:54	20.605	0.172	86.723	86.372
12:48:09	20.616	0.146	86.697	86.439
12:48:24	20.623	0.129	86.571	86.405
12:48:39	20.627	0.118	76.485	112.601
12:48:54	20.464	0.121	107.550	814.981
12:49:09	20.385	0.104	107.550	862.326
12:49:24	20.395	0.096	107.550	861.940
12:49:39	20.400	0.093	107.550	860.325
12:49:54	20.399	0.090	107.550	862.037
12:50:09	20.397	0.088	107.550	858.898
12:50:24	18.663	0.087	76.534	238.824
12:50:39	2.715	0.084	4.645	4.730
12:50:54	0.145	0.055	3.135	3.461
12:51:09	0.035	0.053	2.903	3.237
12:51:24	0.009	0.052	2.760	3.095
12:51:39	0.002	0.051	2.682	3.023
12:51:54	-0.007	0.050	2.626	2.927

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

Date: **September 20, 2017**  
 Start Time 7:43 Wednesday  
 Stop Time 8:29 Wednesday

**CALIBRATION ERROR**

Channel	1 O2	2 CO2	3 THC	4 THC
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	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
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**Instrument Information**

Manufacturer:	Servomex	Servomex	VIG	VIG
Model:	1420C	1415C	20	20
Detection:	Paramagn.	NDIR	FID	FID

Asset or Serial No: 68A 68A 210180 210180

**Calibration Span Value (CS)**

20.950 12.400 100.000 1000.000

**System Response Time (seconds)**

**Manufacturer Certified Cylinder Value (C<sub>v</sub>)**

Zero	0.000	0.000	0.000	0.000
Low	12.100	4.990	25.100	150.000
Mid			45.700	456.000
High	20.950	12.400	85.000	861.000

**Actual gas to be used for bias checks**

20.950 4.990 85.000 861.000

**Cylinder ID**

Zero	CNG896	CNG896	CNG896	CNG896
Low	ALM007968	CC58687	CC75663	ALM060770
Mid			EB0064387	ALM022481
High	CC263665	ALM007968	ALM023930	AAL21204

**Analyzer Calibration Response (C<sub>pr</sub>)**

Zero	0.008	-0.002	-0.244	0.141				
Low	12.140	5.205	24.625	148.828				
Mid			43.845	457.861				
High	20.982	12.432	85.076	860.492				

**Analyzer Calibration Error (ACE) (Limit = 2%, Method 25A limit = 5% of gas value)**

Zero	0.0%	0.0%	-0.2%	0.0%
Low	0.2%	1.7%	-1.9%	-0.8%
Mid	N/A	N/A	-4.1%	0.4%
High	0.2%	0.3%	0.1%	-0.1%

**Calibration Error Status**

Zero	OK	OK	OK	OK
Low	OK	OK	OK	OK
Mid	N/A	N/A	OK	OK
High	OK	OK	OK	OK

101017 144057

07:43:33	20.651	0.170	1.393	1.721
07:43:48	18.435	0.164	1.410	1.722
07:44:03	2.590	0.109	1.411	1.698
07:44:18	0.143	0.098	1.413	1.728
07:44:33	0.032	0.096	1.413	1.710
07:44:48	0.020	0.095	1.399	1.710
07:45:03	0.018	0.096	1.396	1.689
07:45:18	0.000	0.095	1.399	1.685
07:45:33	0.011	0.095	1.402	1.674
07:45:48	0.002	0.094	1.394	1.658
07:46:03	0.026	0.094	1.409	1.660
07:46:18	0.017	0.095	1.401	1.635
07:46:33	0.012	0.093	1.389	1.654
07:46:48	0.010	0.060	1.394	1.657
07:47:03	0.002	0.016	1.393	1.657
07:47:18	0.014	-0.011	1.391	1.661
07:47:33	0.007	-0.011	0.756	1.133
07:47:48	0.354	-0.010	0.675	1.035
07:48:03	15.010	4.990	0.674	1.030
07:48:18	20.466	18.638	0.681	1.013
07:48:33	20.728	20.459	0.675	1.011
07:48:48	20.751	20.594	0.667	0.998
07:49:03	20.753	20.627	0.670	1.026

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

Date: **September 20, 2017**  
 Start Time 7:43 Wednesday  
 Stop Time 8:29 Wednesday

CALIBRATION ERROR

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
07:49:18	20.756	20.648	0.673	1.028
07:49:33	20.755	20.656	0.652	1.013
07:49:48	20.756	20.668	0.659	1.018
07:50:03	20.760	20.672	0.665	1.039
07:50:18	20.760	20.683	0.672	1.055
07:50:33	20.763	20.687	0.672	1.047
07:50:48	20.762	20.692	0.656	1.072
07:51:03	20.763	20.696	0.644	1.063
07:51:18	20.868	20.716	0.652	1.024
07:51:33	20.976	21.034	0.663	1.045
07:51:48	20.990	21.062	0.658	1.035
07:52:03	20.979	21.062	0.659	1.006
07:52:18	20.978	21.069	0.658	0.987
07:52:33	20.979	21.074	0.669	0.999
07:52:48	20.979	21.072	0.677	1.013
07:53:03	20.980	21.073	0.670	0.990
07:53:18	20.983	21.076	0.661	0.954
07:53:33	20.981	21.074	0.660	0.943
07:53:48	20.984	21.076	0.652	0.980
07:54:03	20.982	21.081	0.664	0.964
07:54:18	20.983	21.084	0.665	0.943
07:54:33	17.562	16.838	0.660	0.925
07:54:48	12.352	10.632	0.664	0.945
07:55:03	12.143	12.104	0.670	0.921
07:55:18	12.149	12.151	0.665	0.958
07:55:33	12.151	12.157	0.666	0.974
07:55:48	12.152	12.162	0.682	0.971
07:56:03	12.150	12.162	0.680	0.966
07:56:18	12.149	12.164	0.669	0.971
07:56:33	12.152	12.165	0.678	1.002
07:56:48	12.149	12.166	0.685	0.989
07:57:03	12.161	12.164	0.695	0.992
07:57:18	12.154	12.167	0.702	0.991
07:57:33	12.163	12.168	0.702	0.967
07:57:48	12.156	12.169	0.700	0.947
07:58:03	12.147	12.216	0.700	1.015
07:58:18	12.139	12.393	0.691	0.998
07:58:33	12.145	12.392	0.682	1.004
07:58:48	12.140	12.406	0.658	0.995
07:59:03	12.137	12.452	0.662	1.013
07:59:18	12.139	12.450	0.653	0.991
07:59:33	12.140	12.436	0.658	1.044
07:59:48	12.141	12.433	0.653	1.029
08:00:03	12.137	12.428	0.658	1.047
08:00:18	12.154	12.434	0.663	1.048
08:00:33	10.413	9.093	0.655	1.018
08:00:48	5.700	5.169	0.654	1.026
08:01:03	5.110	5.208	0.653	1.052
08:01:18	5.038	5.238	0.645	1.072
08:01:33	5.028	5.220	0.645	1.062
08:01:48	5.020	5.208	0.643	1.057
08:02:03	5.021	5.207	0.645	1.072
08:02:18	5.018	5.203	0.644	1.074
08:02:33	5.032	5.204	0.671	1.109
08:02:48	5.780	5.503	0.745	1.199
08:03:03	11.401	4.845	1.312	1.706
08:03:18	16.327	1.879	0.040	0.509
08:03:33	8.795	0.891	-0.015	0.426
08:03:48	3.307	0.396	-0.038	0.431
08:04:03	1.277	0.186	-0.057	0.428
08:04:18	0.533	0.101	-0.043	0.439
08:04:33	0.231	0.067	-0.064	0.431
08:04:48	0.060	0.036	-0.076	0.459
08:05:03	0.007	0.022	-0.095	0.437
08:05:18	-0.008	0.017	-0.096	0.416
08:05:33	-0.003	0.015	-0.106	0.431

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

Date: **September 20, 2017**  
 Start Time 7:43 Wednesday  
 Stop Time 8:29 Wednesday

CALIBRATION ERROR

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
08:05:48	-0.005	0.013	-0.110	0.398
08:06:03	0.396	0.013	-0.230	0.321
08:06:18	12.646	7.574	-0.389	0.144
08:06:33	20.290	20.015	-0.379	0.144
08:06:48	20.709	21.106	-0.372	0.130
08:07:03	20.733	21.191	-0.363	0.163
08:07:18	20.734	21.212	-0.371	0.181
08:07:33	20.749	21.221	-0.364	0.150
08:07:48	20.778	21.230	-0.357	0.174
08:08:03	20.779	21.237	-0.359	0.143
08:08:18	20.775	21.241	-0.354	0.139
08:08:33	20.776	21.242	-0.357	0.122
08:08:48	17.386	19.011	-0.319	0.137
08:09:03	12.422	12.996	-0.320	0.128
08:09:18	12.049	12.346	-0.320	0.124
08:09:33	12.029	12.295	-0.319	0.103
08:09:48	12.025	12.284	-0.319	0.098
08:10:03	12.024	12.282	-0.321	0.090
08:10:18	12.020	12.279	-0.310	0.093
08:10:33	9.206	10.524	-0.233	0.197
08:10:48	5.300	5.855	-0.242	0.179
08:11:03	4.999	5.243	-0.249	0.149
08:11:18	4.998	5.205	-0.235	0.166
08:11:33	4.982	5.194	-0.242	0.142
08:11:48	4.980	5.188	-0.245	0.156
08:12:03	4.978	5.183	-0.247	0.126
08:12:18	4.977	5.179	-0.240	0.142
08:12:33	4.979	5.177	-0.168	0.163
08:12:48	9.610	4.253	52.726	45.457
08:13:03	19.081	0.910	81.532	69.773
08:13:18	20.561	0.136	84.901	69.990
08:13:33	20.645	0.072	85.001	69.772
08:13:48	20.655	0.063	84.969	69.951
08:14:03	20.658	0.058	85.116	70.216
08:14:18	20.662	0.055	85.143	70.073
08:14:33	20.660	0.051	77.037	63.383
08:14:48	20.335	0.053	26.532	22.253
08:15:03	20.316	0.047	24.676	20.565
08:15:18	20.334	0.046	24.668	20.500
08:15:33	20.336	0.045	24.655	20.501
08:15:48	20.354	0.044	24.649	20.494
08:16:03	20.365	0.041	24.616	20.482
08:16:18	20.356	0.040	24.640	20.483
08:16:33	20.355	0.036	24.620	20.353
08:16:48	20.350	0.038	24.590	20.168
08:17:03	20.349	0.037	31.720	25.687
08:17:18	20.523	0.038	43.312	35.160
08:17:33	20.744	0.038	43.170	35.185
08:17:48	20.760	0.038	43.357	35.286
08:18:03	20.766	0.038	43.900	34.825
08:18:18	20.766	0.037	43.857	34.768
08:18:33	20.764	0.038	43.779	34.711
08:18:48	20.767	0.036	43.834	34.799
08:19:03	20.772	0.037	43.067	35.130
08:19:18	20.751	0.036	43.402	35.318
08:19:33	20.757	0.038	44.018	35.916
08:19:48	20.763	0.035	67.176	207.538
08:20:03	20.395	0.048	107.550	700.095
08:20:18	20.430	0.034	107.550	711.750
08:20:33	20.440	0.031	107.550	711.637
08:20:48	20.438	0.031	107.550	713.351
08:21:03	20.436	0.031	107.550	908.486
08:21:18	20.427	0.031	107.550	867.869
08:21:33	20.428	0.031	107.550	858.743
08:21:48	20.428	0.030	107.550	858.850
08:22:03	20.428	0.031	107.550	860.736

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

Date: **September 20, 2017**  
 Start Time 7:43 Wednesday  
 Stop Time 8:29 Wednesday

CALIBRATION ERROR

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
08:22:18	20.426	0.031	107.550	861.344
08:22:33	20.433	0.030	107.550	859.397
08:22:48	20.433	0.030	107.550	859.558
08:23:03	20.430	0.031	107.550	786.896
08:23:18	20.287	0.033	107.550	180.182
08:23:33	20.546	0.030	107.550	147.138
08:23:48	20.603	0.029	107.550	148.960
08:24:03	20.606	0.029	107.550	148.886
08:24:18	20.618	0.029	107.550	148.639
08:24:33	20.615	0.028	107.550	148.781
08:24:48	20.615	0.029	107.550	148.082
08:25:03	20.625	0.028	81.792	100.569
08:25:18	20.758	0.044	6.840	6.787
08:25:33	20.638	0.075	87.226	269.077
08:25:48	20.472	0.179	107.550	450.064
08:26:03	20.808	0.039	107.550	452.571
08:26:18	20.829	0.028	107.550	457.414
08:26:33	20.830	0.027	107.550	456.783
08:26:48	20.829	0.027	107.550	457.718
08:27:03	20.833	0.028	107.550	458.160
08:27:18	20.834	0.027	107.550	457.705
08:27:33	20.832	0.026	107.550	457.015
08:27:48	20.841	0.027	107.550	458.257
08:28:03	20.835	0.027	107.550	435.370
08:28:18	15.628	0.026	33.439	36.405
08:28:33	1.555	0.001	0.597	0.914
08:28:48	0.105	-0.003	0.263	0.612
08:29:03	0.011	-0.006	0.160	0.525

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 20, 2017  
 Start Time 8:04  
 Stop Time 8:29

#### CALIBRATION BIAS 00

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv

#### System Response to Calibration Gasses (Cs)

C <sub>o1</sub>	Zero gas	-0.005	0.015	-0.244	0.141			
C <sub>u1</sub>	Upscale gas	20.778	5.180	85.076	860.492			

#### Analyzer Calibration Error Responses (C<sub>dir</sub>)

C <sub>oce</sub>	Zero gas	0.008	-0.002	-0.244	0.141
C <sub>mce</sub>	Upscale gas	20.982	5.205	85.076	860.492

#### Actual Upscale Gas Value (C<sub>MA</sub>)

C <sub>ma</sub>	Upscale gas	20.950	4.990	85.000	861.000
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#### Calibration Span Value (CS)

	20.950	12.400	100.000	1000.000
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#### System Bias as Percent of Calibration Span Value (SB) (5%)

Zero gas	-0.1%	0.1%	0.0%	0.0%
Upscale gas	-1.0%	-0.2%	0.0%	0.0%

#### System Bias Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

#### Previous System Response to Calibration Gases (Cs)

C <sub>oi</sub>	Zero gas	N/A	N/A	N/A	N/A
C <sub>ui</sub>	Upscale gas	N/A	N/A	N/A	N/A

#### Drift Assessment as Percent of Calibration Span Value (D) (3%)

Zero gas	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A

#### Drift Assessment Status

Zero gas	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A

101017 144057

08:04:03	1.277	0.186	-0.057	0.428
08:04:18	0.533	0.101	-0.043	0.439
08:04:33	0.231	0.067	-0.064	0.431
08:04:48	0.060	0.036	-0.076	0.459
08:05:03	0.007	0.022	-0.095	0.437
08:05:18	-0.008	0.017	-0.096	0.416
08:05:33	-0.003	0.015	-0.106	0.431
08:05:48	-0.005	0.013	-0.110	0.398
08:06:03	0.396	0.013	-0.230	0.321
08:06:18	12.646	7.574	-0.389	0.144
08:06:33	20.290	20.015	-0.379	0.144
08:06:48	20.709	21.106	-0.372	0.130
08:07:03	20.733	21.191	-0.363	0.163
08:07:18	20.734	21.212	-0.371	0.181
08:07:33	20.749	21.221	-0.364	0.150
08:07:48	20.778	21.230	-0.357	0.174
08:08:03	20.779	21.237	-0.359	0.143
08:08:18	20.775	21.241	-0.354	0.139
08:08:33	20.776	21.242	-0.357	0.122
08:08:48	17.386	19.011	-0.319	0.137
08:09:03	12.422	12.996	-0.320	0.128
08:09:18	12.049	12.346	-0.320	0.124
08:09:33	12.029	12.295	-0.319	0.103
08:09:48	12.025	12.284	-0.319	0.098

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 20, 2017  
 Start Time 8:04  
 Stop Time 8:29

**CALIBRATION BIAS 00**

Channel	1	2	3	4
	O2	CO2	THC	THC
	<b>Stack Hi</b>	<b>Stack Hi</b>	<b>Stack Lo</b>	<b>Stack Hi</b>
	%dv	%dv	ppmwv	ppmwv
08:10:03	12.024	12.282	-0.321	0.090
08:10:18	12.020	12.279	-0.310	0.093
08:10:33	9.206	10.524	-0.233	0.197
08:10:48	5.300	5.855	-0.242	0.179
08:11:03	4.999	5.243	-0.249	0.149
08:11:18	4.998	5.205	-0.235	0.166
08:11:33	4.982	5.194	-0.242	0.142
08:11:48	4.980	5.188	-0.245	0.156
08:12:03	4.978	5.183	-0.247	0.126
08:12:18	4.977	5.179	-0.240	0.142
08:12:33	4.979	5.177	-0.168	0.163
08:12:48	9.610	4.253	52.726	45.457
08:13:03	19.081	0.910	81.532	69.773
08:13:18	20.561	0.136	84.901	69.990
08:13:33	20.645	0.072	85.001	69.772
08:13:48	20.655	0.063	84.969	69.951
08:14:03	20.658	0.058	85.116	70.216
08:14:18	20.662	0.055	85.143	70.073
08:14:33	20.660	0.051	77.037	63.383
08:14:48	20.335	0.053	26.532	22.253
08:15:03	20.316	0.047	24.676	20.565
08:15:18	20.334	0.046	24.668	20.500
08:15:33	20.336	0.045	24.655	20.501
08:15:48	20.354	0.044	24.649	20.494
08:16:03	20.365	0.041	24.616	20.482
08:16:18	20.356	0.040	24.640	20.483
08:16:33	20.355	0.036	24.620	20.353
08:16:48	20.350	0.038	24.590	20.168
08:17:03	20.349	0.037	31.720	25.687
08:17:18	20.523	0.038	43.312	35.160
08:17:33	20.744	0.038	43.170	35.185
08:17:48	20.760	0.038	43.357	35.286
08:18:03	20.766	0.038	43.900	34.825
08:18:18	20.766	0.037	43.857	34.768
08:18:33	20.764	0.038	43.779	34.711
08:18:48	20.767	0.036	43.834	34.799
08:19:03	20.772	0.037	43.067	35.130
08:19:18	20.751	0.036	43.402	35.318
08:19:33	20.757	0.038	44.018	35.916
08:19:48	20.763	0.035	67.176	207.538
08:20:03	20.395	0.048	107.550	700.095
08:20:18	20.430	0.034	107.550	711.750
08:20:33	20.440	0.031	107.550	711.637
08:20:48	20.438	0.031	107.550	713.351
08:21:03	20.436	0.031	107.550	908.486
08:21:18	20.427	0.031	107.550	867.869
08:21:33	20.428	0.031	107.550	858.743
08:21:48	20.428	0.030	107.550	858.850
08:22:03	20.428	0.031	107.550	860.736
08:22:18	20.426	0.031	107.550	861.344
08:22:33	20.433	0.030	107.550	859.397
08:22:48	20.433	0.030	107.550	859.558
08:23:03	20.430	0.031	107.550	786.896
08:23:18	20.287	0.033	107.550	180.182

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 20, 2017  
 Start Time 8:04  
 Stop Time 8:29

**CALIBRATION BIAS 00**

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
08:23:33	20.546	0.030	107.550	147.138
08:23:48	20.603	0.029	107.550	148.960
08:24:03	20.606	0.029	107.550	148.886
08:24:18	20.618	0.029	107.550	148.639
08:24:33	20.615	0.028	107.550	148.781
08:24:48	20.615	0.029	107.550	148.082
08:25:03	20.625	0.028	81.792	100.569
08:25:18	20.758	0.044	6.840	6.787
08:25:33	20.638	0.075	87.226	269.077
08:25:48	20.472	0.179	107.550	450.064
08:26:03	20.808	0.039	107.550	452.571
08:26:18	20.829	0.028	107.550	457.414
08:26:33	20.830	0.027	107.550	456.783
08:26:48	20.829	0.027	107.550	457.718
08:27:03	20.833	0.028	107.550	458.160
08:27:18	20.834	0.027	107.550	457.705
08:27:33	20.832	0.026	107.550	457.015
08:27:48	20.841	0.027	107.550	458.257
08:28:03	20.835	0.027	107.550	435.370
08:28:18	15.628	0.026	33.439	36.405
08:28:33	1.555	0.001	0.597	0.914
08:28:48	0.105	-0.003	0.263	0.612
08:29:03	0.011	-0.006	0.160	0.525

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 20, 2017  
 Start Time 8:58  
 Stop time 12:20

REFERENCE METHOD RUN 5

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
<b>Calibration Checks</b>				
C <sub>oi</sub> Initial zero	-0.005	0.015	-0.244	0.141
C <sub>ui</sub> Initial upscale	20.778	5.180	85.076	860.492
C <sub>of</sub> Final zero	0.001	-0.025	0.944	1.174
C <sub>uf</sub> Final upscale	20.825	5.157	87.874	858.506
C <sub>ma</sub> Actual gas value	20.950	4.990	85.000	861.000
<b>Analyzer Averages (concentrations)</b>				
C <sub>Avg</sub> Average conc.	20.871	0.023	103.241	429.844
C <sub>Gas</sub> Bias adjusted	21.020	0.027	101.546	430.265

Clock Time (at end of sample period)

101017 144057	08:43	7.543	0.018	0.371	0.517	
	08:44	20.796	0.067	0.774	0.871	
	08:45	20.816	0.066	0.739	0.854	
	08:46	20.836	0.067	0.747	0.884	
	08:47	20.870	0.067	0.702	0.901	
	08:48	20.887	0.066	0.676	0.912	
	08:49	20.891	0.066	0.674	0.918	
	08:50	20.892	0.066	0.658	0.917	
	08:51	20.892	0.066	0.660	0.934	
	08:52	20.889	0.065	0.652	0.928	
	08:53	20.892	0.065	0.631	0.976	
	08:54	20.889	0.065	0.632	0.970	
	08:55	20.899	0.065	0.662	0.978	
	08:56	20.897	0.065	11.095	12.949	
	08:57	20.891	-0.004	103.289	177.496	
	08:58	20.888	-0.038	101.559	214.360	Start Run
	08:59	20.869	-0.037	107.550	529.792	
	09:00	20.876	-0.035	107.550	239.975	
	09:01	20.880	-0.039	105.981	215.900	
	09:02	20.871	-0.043	107.550	680.559	
	09:03	20.871	-0.057	107.550	658.740	
	09:04	20.882	-0.051	77.397	277.413	Pause run. Pressure drop across enclosure down to 0.002 " H2O
	09:05	20.889	-0.051	11.734	12.644	
	09:06	20.898	-0.051	5.471	6.072	
	09:07	20.898	-0.048	4.304	4.866	
	09:08	20.904	-0.046	3.594	4.109	
	09:09	20.903	-0.047	2.961	3.448	
	09:10	20.898	-0.044	2.597	3.035	
	09:11	20.894	-0.047	2.157	2.582	
	09:12	20.898	-0.045	1.702	2.144	
	09:13	20.903	-0.045	1.626	2.080	
	09:14	20.902	-0.047	1.491	1.921	
	09:15	20.902	-0.047	1.404	1.865	
	09:16	20.902	-0.046	1.332	1.791	
	09:17	20.908	-0.045	1.246	1.744	
	09:18	20.909	-0.043	1.223	1.720	
	09:19	20.907	-0.044	1.252	1.705	
	09:20	20.907	-0.041	1.240	1.666	
	09:21	20.907	-0.043	1.181	1.603	
	09:22	20.904	-0.042	1.154	1.531	
	09:23	20.906	-0.042	1.115	1.475	
	09:24	20.910	-0.040	1.098	1.445	
	09:25	20.908	-0.040	1.077	1.420	
	09:26	20.904	-0.040	1.043	1.339	
	09:27	20.905	-0.039	1.059	1.386	

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 20, 2017  
 Start Time 8:58  
 Stop time 12:20

REFERENCE METHOD RUN 5

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
09:28	20.904	-0.038	1.034	1.315
09:29	20.904	-0.040	1.007	1.319
09:30	20.908	-0.040	0.969	1.301
09:31	20.912	-0.040	0.953	1.337
09:32	20.882	-0.039	0.949	1.357
09:33	20.870	-0.037	0.929	1.421
09:34	20.876	-0.034	0.950	1.446
09:35	20.882	-0.032	0.888	1.423
09:36	20.871	-0.029	0.853	1.403
09:37	20.868	-0.026	0.815	1.388
09:38	20.873	-0.023	0.804	1.416
09:39	20.874	-0.021	0.836	1.380
09:40	20.871	-0.018	0.893	1.334
09:41	20.866	-0.016	0.905	1.303
09:42	20.867	-0.011	0.923	1.267
09:43	20.865	-0.008	0.970	1.276
09:44	20.863	-0.004	1.000	1.273
09:45	20.862	-0.002	1.042	1.249
09:46	20.862	0.001	1.094	1.210
09:47	20.860	0.003	1.132	1.202
09:48	20.858	0.008	1.169	1.173
09:49	20.858	0.011	1.174	1.163
09:50	20.855	0.014	1.185	1.172
09:51	20.855	0.017	1.163	1.207
09:52	20.851	0.022	1.075	1.236
09:53	20.840	0.024	1.005	1.241
09:54	20.844	0.028	0.957	1.249
09:55	20.847	0.031	0.924	1.243
09:56	20.841	0.035	0.904	1.262
09:57	20.852	0.039	0.934	1.252
09:58	20.857	0.043	1.000	1.263
09:59	20.858	0.047	1.038	1.275
10:00	20.859	0.051	1.061	1.291
10:01	20.858	0.054	1.080	1.224
10:02	20.853	0.057	1.089	1.180
10:03	20.852	0.059	1.088	1.172
10:04	20.848	0.063	1.095	1.158
10:05	20.845	0.065	1.102	1.168
10:06	20.845	0.068	1.122	1.146
10:07	20.848	0.070	1.076	1.147
10:08	20.848	0.072	1.019	1.167
10:09	20.848	0.075	0.968	1.183
10:10	20.846	0.078	0.927	1.166
10:11	20.845	0.080	0.900	1.168
10:12	20.846	0.081	0.883	1.143
10:13	20.848	0.084	0.878	1.206
10:14	20.845	0.086	0.908	1.210
10:15	20.843	0.089	0.958	1.176
10:16	20.842	0.091	1.006	1.168
10:17	20.838	0.095	1.016	1.167
10:18	20.833	0.098	1.028	1.132
10:19	20.830	0.100	1.070	1.122
10:20	20.830	0.103	1.115	1.160
10:21	20.832	0.104	1.139	1.114
10:22	20.823	0.105	1.168	1.087
10:23	20.827	0.106	1.227	1.114
10:24	20.830	0.110	1.216	1.102
10:25	20.829	0.113	1.135	1.105
10:26	20.829	0.115	1.080	1.161

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 20, 2017  
 Start Time 8:58  
 Stop time 12:20

REFERENCE METHOD RUN 5

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
10:27	20.824	0.116	1.055	1.207
10:28	20.830	0.118	1.004	1.171
10:29	20.831	0.120	0.985	1.205
10:30	20.833	0.122	0.962	1.227
10:31	20.828	0.122	1.002	1.226
10:32	20.822	0.123	1.041	1.213
10:33	20.820	0.125	1.070	1.200
10:34	20.814	0.125	1.087	1.164
10:35	20.788	0.105	0.996	1.129
10:36	20.831	0.024	0.682	1.007
10:37	20.368	0.021	1.176	1.213
10:38	5.588	-0.024	0.234	0.655
10:39	0.006	-0.049	-0.030	0.344
10:40	9.133	-0.028	39.628	309.777
10:41	20.338	-0.055	107.550	932.332
10:42	20.385	-0.055	107.550	893.290
10:43	20.391	-0.054	107.550	837.439
10:44	20.391	-0.054	107.550	841.838
10:45	20.422	-0.016	96.889	616.358
10:46	12.736	11.146	0.382	0.529
10:47	12.051	11.942	-0.119	0.122
10:48	12.058	11.960	-0.210	0.068
10:49	12.062	11.977	-0.261	0.033
10:50	12.073	11.983	-0.292	-0.024
10:51	12.060	11.991	-0.326	-0.023
10:52	12.063	11.996	-0.344	-0.006
10:53	12.067	12.002	-0.364	0.020
10:54	12.072	12.006	-0.344	-0.011
10:55	12.074	12.009	-0.329	-0.028
10:56	12.082	12.015	-0.339	-0.058
10:57	12.072	12.022	-0.328	-0.093
10:58	19.159	2.959	0.760	0.894
10:59	20.876	0.021	0.737	0.828
11:00	20.886	0.005	0.731	0.818
11:01	20.888	0.001	0.735	0.776
11:02	20.894	-0.001	0.740	0.790
11:03	20.892	-0.002	0.729	0.780
11:04	20.891	0.000	0.732	0.757
11:05	20.892	-0.003	0.751	0.764
11:06	20.890	-0.002	0.721	0.723
11:07	20.892	-0.001	0.732	0.714
11:08	20.890	-0.001	0.809	0.793
11:09	20.895	-0.001	28.891	27.561
11:10	20.890	0.002	100.028	559.402
				Restart Run 5
11:11	20.871	0.006	107.550	645.631
11:12	20.875	0.016	104.272	248.147
11:13	20.881	0.005	107.550	279.811
11:14	20.871	0.008	102.282	445.303
11:15	20.883	0.007	72.523	87.479
11:16	20.875	0.007	107.550	605.373
11:17	20.885	0.003	92.543	183.312
11:18	20.876	0.004	98.786	215.363
11:19	20.877	0.002	79.443	108.011
11:20	20.862	0.010	107.550	312.604
11:21	20.859	0.009	107.550	615.650
11:22	20.875	0.004	100.341	288.916
11:23	20.872	0.010	103.471	566.402
11:24	20.870	0.009	107.550	463.631
11:25	20.865	0.010	107.550	770.242

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 20, 2017  
 Start Time 8:58  
 Stop time 12:20

REFERENCE METHOD RUN 5

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
11:26	20.869	0.010	107.550	725.003
11:27	20.870	0.019	107.550	383.137
11:28	20.862	0.016	107.550	645.865
11:29	20.859	0.011	107.550	394.829
11:30	20.868	0.014	107.550	315.732
11:31	20.860	0.014	107.550	398.003
11:32	20.863	0.016	107.550	470.178
11:33	20.873	0.012	98.215	198.379
11:34	20.872	0.017	107.550	455.004 Pause for port change
11:35	20.863	0.016	103.546	324.193
11:36	20.882	0.011	25.370	25.486
11:37	20.886	0.009	9.496	9.600
11:38	20.884	0.009	6.529	6.715
11:39	20.887	0.011	5.585	5.796
11:40	20.888	0.011	4.336	4.534
11:41	20.887	0.013	3.924	4.142
11:42	20.885	0.016	3.618	3.836
11:43	20.896	0.016	3.103	3.324
11:44	20.901	0.017	2.918	3.188
11:45	20.906	0.016	2.626	2.884
11:46	20.907	0.016	2.435	2.732
11:47	20.912	0.016	2.282	2.590
11:48	20.915	0.017	7.402	7.863
11:49	20.899	0.019	74.956	90.425
11:50	20.891	0.025	107.550	293.834 Restart Run 5
11:51	20.887	0.035	103.706	336.539
11:52	20.864	0.042	107.392	716.127
11:53	20.887	0.038	80.135	106.879
11:54	20.879	0.040	104.832	529.810
11:55	20.866	0.046	107.550	464.303
11:56	20.871	0.046	106.966	486.655
11:57	20.879	0.044	100.894	152.974
11:58	20.865	0.051	98.351	275.925
11:59	20.882	0.048	72.420	149.388
12:00	20.867	0.051	107.091	251.763
12:01	20.870	0.049	106.684	377.846
12:02	20.875	0.048	107.550	325.544
12:03	20.870	0.062	107.366	327.787
12:04	20.885	0.047	87.968	185.502
12:05	20.871	0.048	107.203	486.535
12:06	20.867	0.046	107.550	650.818
12:07	20.872	0.043	107.550	599.361
12:08	20.871	0.050	107.550	908.222
12:09	20.867	0.055	107.550	680.796
12:10	20.863	0.053	107.550	597.601
12:11	20.855	0.049	107.550	863.574
12:12	20.871	0.052	107.550	468.361
12:13	20.872	0.050	107.550	386.294
12:14	20.867	0.050	107.550	467.673
12:15	20.865	0.046	107.550	325.192
12:16	20.868	0.038	107.550	358.875
12:17	20.849	0.043	107.550	764.207
12:18	20.861	0.043	107.550	433.099
12:19	20.868	0.040	103.940	280.448
12:20	20.856	0.044	107.550	408.151 12:20 End Run
12:21	20.851	0.043	96.409	215.812

CALIBRATION BIAS 05

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv

System Response to Calibration Gasses ( $C_s$ )

$C_{o1}$	Zero gas	0.001	-0.025	0.944	1.174			
$C_{u1}$	Upscale gas	20.825	5.157	87.874	858.506			

Analyzer Calibration Error Responses ( $C_{dir}$ )

$C_{oce}$	Zero gas	0.008	-0.002	-0.244	0.141
$C_{mcu}$	Upscale gas	20.982	5.205	85.076	860.492

Actual Upscale Gas Value ( $C_{MA}$ )

$C_{ma}$	Upscale gas	20.950	4.990	85.000	861.000
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Calibration Span Value (CS)

20.950	12.400	100.000	1000.000
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System Bias as Percent of Calibration Span Value (SB) (5%)

Zero gas	0.0%	-0.2%	1.2%	0.1%
Upscale gas	-0.8%	-0.4%	2.8%	-0.2%

System Bias Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

Previous System Response to Calibration Gases ( $C_s$ )

$C_{o1}$	Zero gas	-0.005	0.015	-0.244	0.141
$C_{u1}$	Upscale gas	20.778	5.180	85.076	860.492

Drift Assessment as Percent of Calibration Span Value (D) (3%)

Zero gas	0.0%	-0.3%	1.2%	0.1%
Upscale gas	0.2%	-0.2%	2.8%	-0.2%

Drift Assessment Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

101017 144057

12:24:53	20.539	0.065	7.089	7.082
12:25:08	5.810	1.002	3.843	3.520
12:25:23	0.258	0.065	3.418	3.167
12:25:38	0.042	-0.017	3.192	2.980
12:25:53	0.015	-0.024	3.027	2.861
12:26:08	0.007	-0.024	2.875	2.741
12:26:23	0.001	-0.026	2.747	2.661
12:26:38	-0.005	-0.026	2.640	2.574
12:26:53	0.572	-0.025	2.547	2.561
12:27:08	14.871	9.601	1.491	1.609
12:27:23	20.601	20.370	1.410	1.504
12:27:38	20.814	21.029	1.343	1.414
12:27:53	20.823	21.079	1.298	1.375
12:28:08	20.823	21.087	1.242	1.333
12:28:23	20.829	21.112	1.252	1.339
12:28:38	14.158	16.571	1.624	1.672
12:28:53	5.479	6.174	1.567	1.619
12:29:08	5.028	5.221	1.495	1.580
12:29:23	5.007	5.168	1.452	1.564
12:29:38	4.985	5.143	1.408	1.535
12:29:53	4.994	5.130	1.357	1.470
12:30:08	4.990	5.121	1.321	1.429
12:30:23	4.990	5.125	1.276	1.450
12:30:38	4.985	5.155	1.241	1.405
12:30:53	4.977	5.166	1.194	1.419
12:31:08	4.982	5.141	1.157	1.376
12:31:23	4.982	5.159	1.125	1.352
12:31:38	4.979	5.154	1.092	1.322
12:31:53	4.982	5.156	1.064	1.282
12:32:08	4.971	5.153	1.032	1.271
12:32:23	4.986	5.156	0.999	1.255
12:32:38	4.998	5.158	0.970	1.194
12:32:53	4.989	5.156	0.942	1.199
12:33:08	4.987	5.158	0.919	1.129

Sims Metal Management  
CleanAir Project No. 13318  
Johnston, RI  
TE Outlet

September 20, 2017  
Start Time 12:24  
Stop Time 12:38

CALIBRATION BIAS 05

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
12:33:23	6.982	4.963	31.285	33.541
12:33:38	17.184	1.616	87.266	87.470
12:33:53	20.487	0.206	87.888	88.325
12:34:08	20.706	0.065	87.937	88.532
12:34:23	20.718	0.052	87.976	88.450
12:34:38	20.729	0.045	87.994	88.670
12:34:53	20.732	0.042	87.909	88.573
12:35:08	20.726	0.040	87.891	88.408
12:35:23	20.737	0.037	87.823	88.231
12:35:38	20.743	0.035	93.904	334.130
12:35:53	20.561	0.051	107.550	864.998
12:36:08	20.496	0.036	107.550	861.246
12:36:23	20.483	0.034	107.550	860.531
12:36:38	20.489	0.033	107.550	858.887
12:36:53	20.490	0.031	107.550	858.815
12:37:08	20.491	0.031	107.550	858.263
12:37:23	20.491	0.030	107.550	858.440
12:37:38	20.494	0.030	107.550	858.610
12:37:53	20.489	0.030	106.317	623.173
12:38:08	8.707	0.015	13.336	11.221
12:38:23	0.550	-0.001	1.852	2.186

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 20, 2017  
 Start Time 13:44  
 Stop time 15:33

REFERENCE METHOD RUN 6

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
<b>Calibration Checks</b>				
C <sub>oi</sub> Initial zero	0.001	-0.025	0.944	1.174
C <sub>ui</sub> Initial upscale	20.825	5.157	87.874	858.506
C <sub>of</sub> Final zero	0.004	-0.004	0.944	1.358
C <sub>uf</sub> Final upscale	20.842	5.017	87.733	861.580
C <sub>ma</sub> Actual gas value	20.950	4.990	85.000	861.000
<b>Analyzer Averages (concentrations)</b>				
C <sub>Avg</sub> Average conc.	20.863	0.014	104.676	364.475
C <sub>Gas</sub> Bias adjusted	20.980	0.028	101.511	364.149

Clock Time (at end of sample period)

101017 144057	13:44	20.882	-0.041	16.385	15.553	13:44 Start Run
	13:45	20.881	-0.039	78.084	112.449	
	13:46	20.871	-0.052	87.287	159.781	
	13:47	20.885	-0.038	74.190	113.449	
	13:48	20.875	-0.020	105.299	250.060	
	13:49	20.872	-0.020	105.721	414.048	
	13:50	20.875	-0.008	107.550	318.967	
	13:51	20.873	-0.025	107.550	226.872	
	13:52	20.873	-0.015	107.550	292.811	
	13:53	20.868	-0.044	106.815	387.107	
	13:54	20.859	-0.020	107.550	617.720	
	13:55	20.869	-0.047	107.550	355.112	
	13:56	20.855	-0.007	107.550	591.334	
	13:57	20.864	-0.015	98.323	200.293	
	13:58	20.865	-0.037	105.937	233.162	
	13:59	20.863	-0.054	107.550	732.749	
	14:00	20.867	-0.030	107.550	313.244	
	14:01	20.868	-0.049	99.188	121.696	
	14:02	20.868	-0.037	107.550	234.258	
	14:03	20.863	-0.034	107.550	322.612	
	14:04	20.863	-0.022	104.083	149.418	
	14:05	20.856	-0.018	107.550	483.260	
	14:06	20.857	-0.045	107.550	585.841	
	14:07	20.862	-0.029	107.550	340.643	
	14:08	20.863	-0.031	104.522	169.068	
	14:09	20.860	-0.047	107.550	507.080	
	14:10	20.849	-0.048	107.550	633.930	
	14:11	20.860	-0.026	104.452	185.893	
	14:12	20.857	-0.027	107.550	276.915	
	14:13	20.852	-0.016	107.550	315.451	
	14:14	20.854	-0.029	107.550	345.765	Pause for port change
	14:15	20.862	-0.043	101.733	187.874	
	14:16	20.877	-0.011	23.037	21.992	
	14:17	20.868	-0.019	8.271	8.074	
	14:18	20.875	-0.021	5.851	5.874	
	14:19	20.878	-0.019	5.404	5.568	
	14:20	20.881	-0.018	4.590	4.805	
	14:21	20.879	-0.025	4.026	4.314	
	14:22	20.881	-0.024	3.587	3.894	
	14:23	20.885	-0.022	3.282	3.623	
	14:24	20.889	-0.037	2.875	3.220	
	14:25	20.889	-0.013	2.659	3.028	
	14:26	20.889	-0.015	2.527	2.961	
	14:27	20.892	-0.017	2.456	2.919	
	14:28	20.895	-0.015	2.340	2.823	

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 20, 2017  
 Start Time 13:44  
 Stop time 15:33

REFERENCE METHOD RUN 6

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
14:29	20.893	-0.020	2.188	2.701
14:30	20.897	-0.015	2.109	2.645
14:31	20.898	-0.017	2.057	2.611
14:32	20.900	-0.020	2.026	2.529
14:33	20.895	-0.018	1.941	2.403
14:34	20.889	-0.019	1.899	2.355
14:35	20.884	-0.017	1.847	2.290
14:36	20.887	-0.016	1.807	2.221
14:37	20.881	-0.017	1.822	2.235
14:38	20.890	-0.016	1.790	2.187
14:39	20.883	-0.017	1.701	2.086
14:40	20.884	-0.012	1.705	2.056
14:41	20.885	-0.012	1.751	2.107
14:42	20.884	-0.012	1.695	2.048
14:43	20.881	-0.013	1.622	1.977
14:44	20.882	-0.013	1.656	2.009
14:45	20.882	-0.013	1.621	1.999
14:46	20.888	-0.013	1.604	1.944
14:47	20.880	-0.007	1.578	1.933
14:48	20.878	-0.002	1.536	1.897
14:49	20.877	-0.005	1.544	1.912
14:50	20.876	-0.007	1.532	1.876
14:51	20.877	-0.009	1.494	1.841
14:52	20.876	-0.007	1.532	1.869
14:53	20.876	-0.003	1.539	1.863
14:54	20.876	-0.002	1.535	1.852
14:55	20.877	0.000	1.548	1.860
14:56	20.874	0.001	1.501	1.798
14:57	20.876	0.007	2.497	2.783
14:58	20.877	0.010	20.237	19.252
14:59	20.876	0.012	5.906	5.856
15:00	20.872	0.012	2.558	2.805
15:01	20.878	0.022	2.180	2.498
15:02	20.874	0.022	71.247	112.781
15:03	20.852	0.024	107.550	283.968
				Restart Run 6
15:04	20.863	0.020	104.720	210.316
15:05	20.865	0.023	107.550	319.287
15:06	20.864	0.028	99.286	167.375
15:07	20.871	0.016	89.172	131.957
15:08	20.870	0.022	107.550	225.561
15:09	20.871	0.025	107.550	486.494
15:10	20.865	0.030	107.535	460.791
15:11	20.867	0.035	107.550	304.160
15:12	20.877	0.032	105.817	162.167
15:13	20.874	0.037	107.550	240.354
15:14	20.875	0.041	104.488	254.437
15:15	20.871	0.065	102.113	194.701
15:16	20.868	0.074	106.700	250.502
15:17	20.866	0.075	107.550	197.798
15:18	20.863	0.077	107.550	686.403
15:19	20.860	0.077	107.550	394.233
15:20	20.868	0.074	107.550	380.594
15:21	20.842	0.087	107.550	704.803
15:22	20.857	0.081	107.550	328.332
15:23	20.863	0.076	106.725	218.768
15:24	20.870	0.074	107.550	294.018
15:25	20.869	0.074	107.280	165.285
15:26	20.868	0.074	93.477	151.681
15:27	20.841	0.084	107.550	802.931

Sims Metal Management  
CleanAir Project No. 13318  
Johnston, RI  
TE Outlet

September 20, 2017  
Start Time 13:44  
Stop time 15:33

REFERENCE METHOD RUN 6

Channel	1	2	3	4
	O2	CO2	THC	THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
15:28	20.850	0.079	107.550	482.911
15:29	20.855	0.074	107.550	393.357
15:30	20.840	0.078	107.550	824.973
15:31	20.836	0.083	107.550	967.183
15:32	20.846	0.079	107.550	847.509
15:33	20.864	0.072	107.550	628.609 End Run
15:34	20.862	0.071	70.239	142.003

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 20, 2017  
 Start Time 15:35  
 Stop Time 15:50

#### CALIBRATION BIAS 06

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv

##### System Response to Calibration Gasses (C<sub>s</sub>)

C <sub>o1</sub>	Zero gas	0.004	-0.004	0.944	1.358			
C <sub>u1</sub>	Upscale gas	20.842	5.017	87.733	861.580			

##### Analyzer Calibration Error Responses (C<sub>dir</sub>)

C <sub>oce</sub>	Zero gas	0.008	-0.002	-0.244	0.141
C <sub>mce</sub>	Upscale gas	20.982	5.205	85.076	860.492

##### Actual Upscale Gas Value (C<sub>MA</sub>)

C <sub>ma</sub>	Upscale gas	20.950	4.990	85.000	861.000
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##### Calibration Span Value (CS)

20.950	12.400	100.000	1000.000
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##### System Bias as Percent of Calibration Span Value (SB) (5%)

Zero gas	0.0%	0.0%	1.2%	0.1%
Upscale gas	-0.7%	-1.5%	2.7%	0.1%

##### System Bias Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

##### Previous System Response to Calibration Gases (C<sub>s</sub>)

C <sub>o1</sub>	Zero gas	0.001	-0.025	0.944	1.174
C <sub>u1</sub>	Upscale gas	20.825	5.157	87.874	858.506

##### Drift Assessment as Percent of Calibration Span Value (D) (3%)

Zero gas	0.0%	0.2%	0.0%	0.0%
Upscale gas	0.1%	-1.1%	-0.1%	0.3%

##### Drift Assessment Status

Zero gas	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK

101017 144057

15:35:15	0.173	0.005	5.128	4.954
15:35:30	0.023	-0.003	4.563	4.496
15:35:45	0.013	-0.003	4.142	4.150
15:36:00	0.012	-0.003	3.825	3.907
15:36:15	-0.004	-0.004	3.557	3.700
15:36:30	0.003	-0.004	3.317	3.513
15:36:45	0.000	-0.005	3.120	3.330
15:37:00	-0.002	-0.004	2.959	3.193
15:37:15	-0.007	-0.004	2.806	3.043
15:37:30	-0.009	-0.004	2.667	2.911
15:37:45	-0.011	-0.004	2.539	2.816
15:38:00	-0.006	-0.004	2.424	2.740
15:38:15	-0.001	-0.004	2.329	2.661
15:38:30	0.000	-0.005	2.271	2.618
15:38:45	0.009	-0.004	2.207	2.577
15:39:00	0.004	-0.004	2.142	2.521
15:39:15	4.607	1.103	1.932	2.390
15:39:30	19.365	17.196	1.173	1.657
15:39:45	20.793	21.036	1.125	1.595
15:40:00	20.829	21.166	1.078	1.562
15:40:15	20.839	21.203	1.036	1.501
15:40:30	20.840	21.212	1.005	1.434
15:40:45	20.839	21.228	0.970	1.385
15:41:00	20.841	21.221	0.936	1.384
15:41:15	20.840	21.225	0.901	1.341
15:41:30	20.837	21.213	0.878	1.343
15:41:45	20.846	21.138	0.851	1.322
15:42:00	20.839	21.023	0.822	1.282
15:42:15	20.840	21.002	0.801	1.267
15:42:30	20.040	20.843	0.997	1.457
15:42:45	7.753	9.777	1.149	1.586
15:43:00	5.097	5.325	1.105	1.565
15:43:15	5.010	5.112	1.079	1.519
15:43:30	5.003	5.081	1.057	1.455

Sims Metal Management  
 CleanAir Project No. 13318  
 Johnston, RI  
 TE Outlet

September 20, 2017  
 Start Time 15:35  
 Stop Time 15:50

CALIBRATION BIAS 06

Channel	1 O2	2 CO2	3 THC	4 THC
	Stack Hi %dv	Stack Hi %dv	Stack Lo ppmwv	Stack Hi ppmwv
15:43:45	4.996	5.062	1.040	1.431
15:44:00	4.997	5.051	1.019	1.409
15:44:15	4.995	5.041	1.013	1.439
15:44:30	4.992	4.989	0.991	1.416
15:44:45	4.994	5.024	0.967	1.396
15:45:00	4.990	5.023	0.949	1.385
15:45:15	4.994	5.002	0.947	1.353
15:45:30	4.982	4.957	0.937	1.336
15:45:45	8.623	4.493	65.981	65.142
15:46:00	19.540	0.667	87.837	84.527
15:46:15	20.674	0.027	87.909	84.240
15:46:30	20.706	-0.033	87.922	84.321
15:46:45	20.721	-0.028	87.848	84.527
15:47:00	20.724	-0.012	87.772	84.303
15:47:15	20.727	-0.026	87.766	84.414
15:47:30	20.728	-0.048	87.662	84.239
15:47:45	20.741	-0.029	81.999	357.487
15:48:00	20.526	-0.009	107.550	809.741
15:48:15	20.487	-0.035	107.550	862.366
15:48:30	20.483	-0.049	107.550	863.492
15:48:45	20.486	-0.031	107.550	858.881
15:49:00	20.486	-0.035	107.550	862.612
15:49:15	20.487	-0.043	107.550	857.843
15:49:30	20.486	-0.034	107.550	822.622
15:49:45	20.501	-0.035	91.566	179.888
15:50:00	9.193	-0.052	4.971	4.717
15:50:15	0.364	-0.070	1.728	1.781
15:50:30	0.046	-0.072	1.502	1.602

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